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VETERANS' ADMINISTRATION'S DECENTRALIZED HOSPITAL COMPUTER PROGRAM

HEARING

BEFORE THE

SUBCOMMITTEE ON
HOSPITALS AND HEALTH CARE

OF THE

COMMITTEE ON VETERANS' AFFAIRS
HOUSE OF REPRESENTATIVES

ONE HUNDREDTH CONGRESS

FIRST SESSION

APRIL 8, 1987

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THE VETERANS' ADMINISTRATION'S DECENTRALIZED HOSPITAL COMPUTER PROGRAM

WEDNESDAY, APRIL 8, 1987

House of Representatives,
Subcommittee on Hospitals and Health Care,
Committee on Veterans' Affairs,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9 a.m., in room 334, Cannon House Office Building, the Honorable G.V. (Sonny) Montgomery (chairman of the subcommittee) presiding.

Present: Representatives Montgomery, Penny, Rowland of Georgia, Gray, Stenholm, Harris, Kennedy, Solomon, Hammerschmidt, and Bilirakis.

OPENING STATEMENT OF CHAIRMAN MONTGOMERY

Mr. Montgomery. The subcommittee will come to order. The purpose of our hearing today is to examine in detail the status of the VA's Decentralized Hospital Computer Program. This program is referred to as DHCP.

We can certainly all agree that the installation of medical computer systems in 172 VA hospitals is complex and it does have its problems. But there is more beyond the technical matters of hardware, software and installation of computers. This is a tough job of calculating the costs and effectiveness of a computer system, both alone and in comparison with other systems.

Let there be no mistake about the question we face today, to complete the DHCP system or scrap it. That would mean to scrap the 4 years of effort that have been expended; to scrap the $200 million that have already been invested; to scrap the 10 years of testing of commercial systems; and to scrap the training of VA staff that has already been completed.

Incidentally, to the committee members, we will have people from the different hospitals and centers here today to testify from across the land. We appreciate those people being here to tell us what they think about the systems we have in place now.

The most serious waste of all would be to scrap a system that is operational today in 169 VA hospitals and that has the strong support of users. I would just mention that these users are the doctors, the nurses, the pharmacists, and other health care professionals. Incidentally, I went in my hospital in Jackson, Mississippi about 6:30 the other night, on a Friday night. I found the pharmacy was still open. I went in and talked to those people who operate those computers there. They said, please don't change now, we have learned how to operate them, they are working well, and we think we are doing good on the computers we have. This was in the pharmacy area of the Jackson VA Hospital.

Yet the questions that I thought we had answered back many years ago are being asked again; same old questions: The words are different but they cover with new talk the old questions. Is the VA to have a centralized or decentralized computer system? Is the VA to have a commercial or tailored system?

I am concerned that this decision made so long ago must be revisited. I'm concerned about that. The Veterans' Affairs and Appropriations Committees of the House and Senate, the General Services Administration, the Office of Management and Budget and the VA have agreed to go along with the DHCP system. We all got together and that is hard to do up here, get all of that group together, but we did get together on the systems we have in place now.

All of the evaluations so far have recommended continuation of the DHCP system. These evaluations have been conducted by the VA's Inspector General, the Department of the Air Force, the A.D. Little Company, Price-Waterhouse Corporation, Booz-Allen & Hamilton Corporation and the General Accounting Office, have said let's continue this operation of DHCP.

Many of you have been told that this is a small issue. The health care of veterans is not a small issue. Many of you have been told my interest in DHCP cannot be understood. Well, quite frankly, the way I got into this was to try to save the taxpayers some money. If that's wrong, then I'm wrong.

Let me tell you that I care very much about a cost-effective medical computer system to be established by the VA. Let me tell you that I do not want to delay for several more years while we ask and answer the same questions that we have asked and answered before. I do not want to waste more federal funds re-testing systems that we have already tested.

I hope this hearing today will resolve the issue. Those that are giving us problems, I hope you are here and we are not preaching to the choir.

I would now like to recognize my friend and ranking member of the subcommittee, John Paul Hammerschmidt for any remarks he would like to make. Mr. Hammerschmidt.

[The prepared statement of Chairman Montgomery appears at p. 93.]

OPENING STATEMENT OF HON. JOHN PAUL HAMMERSCHMIDT

Mr. HAMMERSCHMIDT. Thank you, Mr. Chairman.

Mr. Chairman, you have called this hearing at a critical juncture for the VA's acquisition of the state-of-the-art and cost effective medical computer system. As a strong supporter of the Decentralized Hospital Computer Program system known as DHCP and knowing your position on DHCP, it's my position that it would be a very serious mistake to interrupt this system now with another evaluation.

As you know, the committee staff has talked to many of the VA people in the field about the possibility of placing DHCP on hold while the Congress conducts yet another evaluation of the system. We asked the staff to do this to determine user satisfaction or lack of it, to determine effectiveness of the system or the lack of it, and determine if our current feeling about the system is a correct one.

Even I was surprised with the results of these inquiries. The staff talked to more than 35 hospital directors and found no one supportive of a recommendation to delay enhancement of the DHCP system. All were pleased with it. I think it's safe to say that all would be dismayed at any substantive change.

Staff members from a different committee have also been making inquiries about DHCP. In my view, they must have been asking the wrong questions. They apparently haven't been asking the same questions that brought forth the answers that we received.

Mr. Chairman, the only real problem we were able to find concerning the DHCP system involved the serious lack of more hardware funding for the program. Mr. Chairman, let me cite some examples of the comments our committee has received from around the country regarding the program.

Michael Kane, Director of the Bedford, Massachusetts Hospital said he and the entire staff of his facility are very supportive and even a minor change in current strategy would seriously jeopardize efforts to assure quality patient care.

Dan Kadrovach, Director of the Fayetteville, Arkansas Hospital Center says they are very pleased with the DHCP system in the entire district, which includes seven VA hospitals, that any interference would bring the innovations they have made to improve the system to a screeching halt.

Jerry Boyd, Director of the Boston Hospital, says that their DHCP system is doing everything it is intended to do and everything they want it to do. He says that if the system were held up for an evaluation, they would find themselves falling behind in the state-of-the-art and being forced to play catch-up all over again.

Clarence Nixon, Director of the Martinez, California Veterans Hospital has worked in the health care field for over 32 years and says that in his opinion, nothing in the private sector even comes close to DHCP. He says it is a totally integrated database and is extremely user friendly. Mr. Nixon says he is willing to place his reputation and job on the line to say that no one in the private sector could set up a similar system in less than 4 years and at less than four times the cost.

These senior VA field managers are not merely promoting the agency line. If you know these men, you know they are totally dedicated to what is best for the care of our veterans. If they thought so, they wouldn't hesitate for a moment to say that going forward with DHCP would be a mistake.

Mr. Chairman, I will ask that the names and responses of these 35 hospital directors be placed in the record.

Mr. MONTGOMERY. Without objection.

[The information referred to appears at p. 96.]

Mr. HAMMERSCHMIDT. Our survey was not a scientific poll but it speaks more strongly than anything else about the extent of support in the field for DHCP.

Mr. Chairman, until very recently, the current VA medical computer program was moving ahead with deliberate speed. It has had the endorsement of this committee and many others. One could well ask why it now faces obstacles sufficient to warrant this hearing. We need to explore that question in depth as our hearing progresses.

For my part, I want VA to have a good quality computer system that enhances quality medical care, one that is user satisfying and cost effective. If the current system meets these tests, it is my opinion that is should continue to receive our enthusiastic endorsement.

Mr. Chairman, again I commend you for holding these hearings. I'm sorry it is necessary to hold them but I appreciate your initiative in doing so to try to save the Government and the taxpayers some money and give our veterans better health care.

[The prepared statement of Congressman Hammerschmidt appears at p. 112.]

Mr. MONTGOMERY. Thank you, Mr. Hammerschmidt.

Jerry Solomon, the ranking minority member of the full committee.

OPENING STATEMENT OF HON. GERALD B.H. SOLOMON

Mr. SOLOMON. Thank you, Mr. Chairman.

Mr. Chairman, let me first apologize for having to leave today. We are marking up a bill in my Foreign Affairs Committee which is extremely important to the security of this country and I would much rather be here, believe me, because this is an area that I am extremely concerned about and interested in.

Let me just say that I concur with the remarks of our chairman, Sonny Montgomery, and certainly the remarks of the ranking member of the Hospitals and Health Care Subcommittee, my good friend, John Paul Hammerschmidt.

Let me begin by saying that our staff and I have met and talked to over 35 hospital directors and other VA health care professionals involved with this system during the past week. John Paul Hammerschmidt quoted some of them in his remarks and based on these conversations, I firmly believe there is no real substance to the concerns which have been raised regarding the basic DHCP approach.

We are going to listen today to what everyone has to say. Is DHCP the perfect system? Is it all things to all men and of course no, it isn't. I don't know of any system in the world that is. Nothing is. DHCP may need some improvements. I hope we might get into that today, too.

I can't understand why anyone would want to insist on forcing the VA to buy a very expensive computer system that it clearly does not need and does not want. It behooves us to listen to what the VA's managers in this field have to say and if they believe that Chevrolet's will do the job and they like Chevrolet's, why insist on Cadillac's? I've never understood that.

I've met with and talked with VA officials in my home State of New York including Dr. Ron Ginsburg who will be testifying before us today, and have found them all to be, and I say "all" with emphasis, to be very supportive of the DHCP system. There is absolutely no support for the notion of placing the system on hold while yet one more evaluation is conducted. I think that is what is wrong with Government sometimes as opposed to the private sector.

Clark Graninger, Director of the Albany VA Hospital says the system is perfect for the users and that placing the system on hold would curb the excellent programs that they now have underway. That's a very good operating VA hospital in my home town.

The Director of the Bronx Hospital in New York City, where they have a tremendous volume of medical care, James Dooley said that interference with the program would jeopardize the quality of care their hospital currently provides our veterans.

Let me just repeat that, "jeopardize the quality of care their hospital currently provides our veterans." Our hospitals are out there to provide care to veterans. We don't want to jeopardize the care to those veterans.

Richard Droske, the Acting Director of the Buffalo Hospital and Director of the Castlepoint, New York Hospital told us that you can look long and hard and you will not find any dissatisfaction with this present system. He also said congressional interference with DHCP would set them back several years because it would take time to set up a new computer and even more time to get acquainted with the new system.

That's interference with delivery of care to our veterans. I know all of these men. I have the greatest respect for their integrity and their professional judgment compared to mine as a layman. Not one of the over 35 hospital directors we talked to was dissatisfied with this system. In fact, not one of these directors knew of a hospital director, a chief of staff or a medical director who was not totally supportive and pleased with DHCP.

This brings us to the real reason why we are all here today. Although we have dozens of statements in support of DHCP, there was one statement which clearly summed up the DHCP controversy; that statement was made by Robert Dawson, Director of the VA Medical Center in Ashville, North Carolina. Mr. Dawson said and I quote "I cannot understand why there would be any question about the DHCP system unless there is a vested interest in a different system."

Dean Stordrhl, Director of the Long Beach Hospital raised a similar concern. He said they would be very concerned about any attempt to place DHCP on hold because our experience with vendors is that they historically provide a much less useful package at more cost compared to what we can do in-house.

To delay DHCP while an evaluation is conducted would be doing an injustice to the delivery of health care to our Nation's veterans. The VA's medical computer users already know what they need. We should do our best to see that they are provided with the current system instead of long and costly delays.

If we have any extra money, Mr. Chairman, just as you said, and you are looking out for the taxpayers of this Nation as well, if we have any extra money in these days of fiscal restraint, from what I've read and what I've heard so far, and we will listen today, I don't think we ought to be spending it on new systems. I think if there is any money there at all we ought to be using it to upgrade the system we have and to provide better care for veterans, which is what the system is out there for in the first place.

Mr. Chairman, I really thank you and John Paul Hammerschmidt, and your subcommittee for holding these hearings today. I will come back and forth as much as I possibly can during the day. Thank you.

[The prepared statement of Congressman Solomon appears at p. 117.]

Mr. MONTGOMERY. Thank you for being here this morning. Dr. Rowland?

OPENING STATEMENT OF DR. J. ROY ROWLAND

Dr. ROWLAND OF GEORGIA. Thank you very much, Mr. Chairman. I thank you and John Paul Hammerschmidt for having this hearing. Let me just say at the very outset, although the topic here is hospital computer systems, I'm principally concerned about quality of health care for our veterans. I think at the very least that we need to keep this is mind in talking about the hospital computer systems today.

One of those questions is: Does the Decentralized Hospital Computer system, which we refer to as DHCP, do the job now of supporting the clinical needs of the VA health care personnel? Does the DHCP system support the medical review systems that the VA has instituted to monitor the quality of care which is so very important? If the DHCP system were to be stopped and an alternative system put in place during this change over period, what kind of impact would that have on the quality of care? If this system were to be stopped and an alternative system put in place, what would the impact be on the continuity of patients' records that are so necessary for good patient care?

I guess we might ask specifically whether or not the VA is able to determine all of the medication, for example, that we have to keep track of, or the transmission of laboratory results and tracking patient admissions and schedules and transfers and radiology reports that have to be kept account of, and records being kept up to date. It is necessary that reports be filed in a timely way. All of those things, are they being done now in a way that we would expect them to be done.

I know there is going to be a lot of talk today about computers. Mr. Chairman, I don't know a great deal about computers but I understand we will be talking about computer interfaces and functionality and things of that nature. I'm hopeful that the testimony that we hear here today will really make us know and focus on what we are really all about in the first place, and that is the delivery of health care to veterans, which is most important. You have already referred to that and so has Mr. Solomon.

That is not to say that we should not be concerned with cost of care. We have to be concerned with the cost in every aspect of our national Government today, so we have to talk about costs.

I hope that we are going to learn from the witnesses whether or not DHCP is doing a good job insofar as health care is concerned at a reasonable cost.

Thank you, Mr. Chairman.

Mr. MONTGOMERY. Thank you, Doctor. Mr. Stenholm, do you have any comments?

OPENING STATEMENT OF HON. CHARLES W. STENHOLM

Mr. STENHOLM. Thank you, Mr. Chairman. Just briefly, I would like to associate myself with the remarks of all of my colleagues who spoke earlier. The questions Dr. Rowland has asked are those that every member of this committee will want to see answered. I certainly want to apologize to you, Mr. Chairman and other members of the committee, for having to leave in just a moment. I have to chair a committee hearing in the House Agriculture Committee beginning shortly. I will be excusing myself.

I will follow the testimony and look forward to working with you to resolve the questions in a favorable manner.

Mr. MONTGOMERY. Thank you. For our witnesses this morning, you will find that our members will come and go. We do have other committees meeting at this time. We are marking up certain pieces of legislation.

Joe Kennedy?

OPENING STATEMENT OF HON. JOSEPH P. KENNEDY, II

Mr. KENNEDY. Thank you, Mr. Chairman. I, too, have a conflict in just a short period of time, Mr. Chairman. I appreciate Dr. Gronvall and all of the other witnesses taking their time to discuss this issue. On a quick glance, I can't understand why we would be spending quite so much time on this issue. I do understand from the testimony that I've looked at thus far that the health care industry is complex within the VA and probably one of the largest systems in the western world. It has spent over $200 million in a computer system that it is fairly content with, despite some problems.

We have another organization, that is another branch of the Congress that is suggesting that perhaps the health care complex ought to re-think its choice of systems even though it is has undertaken a somewhat costly study comparing the possibilities.

Before we go ahead and allow yet another costly study done by the OTA, we ought to think clearly about the interests of one important group of people. I'm not talking about the people that make the software or the hardware, people that stand to gain from a lucrative contract. I'm talking about the American veterans that number tens of millions who deserve the best medical care that we can give them because of what they have given to all of us.

I'm talking about the men and women who served in both World Wars, Korea and Vietnam. This is a population that is growing older and in greater need of better health care. This world ought to be able to provide that health care. I can't believe that requiring the VA to give up its present computer system that it seems relatively happy with, to spend $1 billion plus on another system that would take several years to get on line, could possibly serve the best interests of the American veteran.

I am here to find out if I'm wrong in that initial judgment, if so, obviously there are much more critical issues than appear on the surface. I am looking forward to the testimony.

Thank you, Mr. Chairman.

Mr. MONTGOMERY. Thank you, Joe. Claude Harris, do you have any comments?

Mr. HARRIS. No comments, Mr. Chairman.

Mr. MONTGOMERY. We thank you for being here this morning. The committee has received several letters concerning the issue of the DHCP and its IHS programs. Without objection, I request these letters be put in the hearing record.

[The information referred to appears at p. 122.]

Mr. MONTGOMERY. Dr. John Gronvall is at the witness table. He is Chief Medical Director, Veterans' Administration. Doctor, why don't you introduce the other witnesses with you? We would be glad to hear your statement. Your full statement will be put in the record. If you would like to summarize, that is perfectly all right.

STATEMENT OF JOHN GRONVALL, M.D., CHIEF MEDICAL DIRECTOR, VETERANS' ADMINISTRATION, ACCOMPANIED BY DAVID A. COX, ASSOCIATE DEPUTY ADMINISTRATOR FOR MANAGEMENT; DAVID B. VAN HOOSER, DIRECTOR, MEDICAL INFORMATION RESOURCES MANAGEMENT;, AND WILLIAM THOMAS, OFFICE OF THE GENERAL COUNSEL

STATEMENT OF DR. JOHN GRONVALL

Dr. GRONVALL. Thank you very much, Mr. Chairman. It is a pleasure for me to introduce the other VA witnesses who are here at the table with me. To my left, Mr. David Cox, who is Associate Deputy Administrator for Management. To my immediate right, Mr. David Van Hooser, who directs our Medical Information Resources Management Office in the Department of Medicine and Surgery. To my far right, Mr. William Thomas, who is from our Office of General Counsel.

Mr. Chairman, I appreciate your inclusion of my full statement in the record. I do have a summary statement that I would like to make at this time.

First and foremost, I want to say that it is a real pleasure for us to be here today to be able to present to you and the committee a real success story, a remarkable success story, namely the creation of the Decentralized Hospital Computer Program for our VA medical centers.

It's very important that I thank you and the committee for the very great and special support that you and this committee have given to the VA in this effort to bring modern automated data processing technology to our medical centers.

Only 3 years ago in fact, the Department of Medicine and Surgery had merely a handful of hospitals with any degree of automation. We began in March 1984 and since that time we have installed state-of-the-art integrated systems in 225 facilities. During this period of time, our staff not only in the medical centers but in the central office have labored hard to catch up with the 20th century developments in computer support.

Our strategy was a very simple and straight forward one. First, it was to acquire low cost equipment and user friendly software developed to VA specifications to meet our most critical patient care needs. Second, it was to rely on the creative abilities of our own VA medical system to get the job done.

Mr. Chairman, I know that you will recall that this initiative, DHCP, was taken after many years of attempting through a centralized management approach to develop a national, all encompassing set of vendor supplied systems and software. That approach did not work. By contrast, the DHCP approach has worked. In the meantime, the country as a whole has been rapidly evolving its understanding and use of ADP technology. People, and that includes our VA staff, are becoming computer literate and are getting directly involved. Our DHCP initiative represents direct user involvement on a truly massive scale. We have literally hundreds of local staff representing many health occupations and interests who are working directly on this very large undertaking national working groups and committees. In my view, this user involvement has helped to assure the success that we are pleased to be able to describe today.

To support this initiative, we engaged in a very large competitive procurement, the largest actually in the VA and federal health care history. This procurement resulted in more than 10 different multi-million dollar, multi-year contracts with five different companies providing computer equipment.

Within our medical centers, we constructed computer rooms, hired computer staff and applications coordinators and trained them for our 225 medical facilities. At this time, we have some 480 computers, 18,900 keyboard terminals, 9,294 printers, all connected by hundreds of miles of electronic cable and this whole system has been made operational at a cost of some $84.5 million.

This ambitious effort is unprecedented in the health care systems industry. In the whole United States in fact, fewer than 30 systems of this type are installed each year by any firm in the entire industry. Diversity and end user involvement in the creation of system software have quite naturally raised problems that have to be worked out from time to time and it is certainly possible for a cost benefit analyst or the comments of a centralized computer manager or a corporate executive hoping to sell ADP systems to the VA, to find aspects of the DHCP system to criticize. There are valid criticisms to be made.

However, I'm concerned that some of the comments I have seen and heard appear to me to be heavily laden with special interests.

A recent campaign of informal proposals and the circulation of an unsigned letter purporting to be able to do what we have already accomplished in some way better or less expensively simply ignores the truth that I've stated, namely that our 225 DHCP sites are rapidly progressing and the only complaint I ever hear in our medical centers is about not getting more of the system sooner.

The truth is that if we started today to competitively procure a commercial replacement for what is already in place, it would be another 7 years before these 225 DHCP sites could get back to the level of computer support that is now in place and in operation.

In my view, Mr. Chairman, this would be an incredible management disaster for the VA hospital system from many points of view. It would waste the training of thousands of valuable personnel. There would be stagnation and loss of interest in our existing system while we wait years for what one would say is a theoretically better or even comparable replacement. The negative impact on morale would be obvious.

The full impact on quality of care and on our hospital operation and the provision of clinical and management information cannot really be estimated but in my view, this is a cost which is both unwise and happily unnecessary.

I do hope that the Congress will not direct a change to our DHCP initiative. By endorsing full development of DHCP, the Congress has an unique opportunity to support improved quality patient care, improved effectiveness of the operation of our medical centers and an improved direct benefit to the quality of care for veteran patients.

Mr. Chairman, that concludes my opening comments and let me turn to Mr. David Cox. He has had extensive experience in development and management of ADP systems not only in the VA but outside the VA and in his testimony, he can provide more in depth detail on the current status of our DHCP program.

Mr. Cox?

[The prepared statement of Dr. Gronvall appears at p. 147.]

STATEMENT OF DAVID A. COX

Mr. Cox. Thank you, Mr. Chairman. I, too, would like to have my formal statement entered into the record, but if I could briefly summarize.

Mr. Montgomery. Without objection, so ordered.

Mr. Cox. Thank you. Over the last 5 years, information processing technology has become economical enough to change the emphasis from large scale central computers to decentralized computers operating in the operating departments of the Veterans' Administration.

As a result, the VA has moved into an ADP environment where we use distributed data processing. Specifically this means that each computer in each of the field stations and in the hospitals is tied together with the central office through a network of telecommunications, so that each element of the organization can share information that exists throughout the VA.

Distributed data processing concepts support and integrate our management philosophy which is decentralized operational management with centralized management policy and financial control. The interdependencies among all Veterans' Administration's systems are significant because these systems directly affect the quality of service the VA can provide to veterans.

For example, in December, we implemented a system where in every medical center you could inquire into the Department of Veterans' Benefits' eligibility files to determine eligibility for the means test. During the first week of operation, we had over 2,000 inquiries into that system. Last week we had 37,000 inquiries into that system in the medical centers. We expect by June to have in the neighborhood of 60,000 inquiries a week into that system.

It is significant because it links three different types of computers in 200 different locations to provide information on the spot where it is needed to support the efforts of the Veterans' Administration in meeting the veterans' needs.

With regard to DHCP, the first computers were shipped to the Veterans' Administration's medical centers in 1984. By November of last year, 169 VA hospitals (225 facilities) were using DHCP to support patient registration, admissions, discharges, transfers, scheduling and outpatient pharmacy. By the end of fiscal year 1987, each hospital had incorporated the inpatient pharmacy, clinical laboratory and other applications as well.

During the period 1983 to 1986, there were many different cost estimates developed for DHCP and I would like to take one second to summarize that if I could, and we provided copies of this to you, sir.

The initial estimate for six applications was for 7 years and it was $155 million. The following year there were several other applications added to the mix and it was decided to extend the life cycle for an additional year, giving it a cost of $203 million. In 1985, there was a total of 24 applications defined that we could do, once again costed over 8 years gives you a cost of approximately $500 million. In 1986 we were asked to define everything we could ever want to do with the system and to cost it out for a period ranging from 10 to 17 years depending on the particular application. We did so and that cost was approximately $1.2 billion.

[See. p. 160.]

The reason I bring this up is if you look at those numbers, the total cost line changes over time, but that is because the number of applications and the number of years costed change over time. If you take a look at the unit costs of the applications, they are approximately the same in all cases and that is $3.2 million per application per year. To put it another way, $20,000 per hospital. That is the cost of a clerk typist or the cost of a gardener to get an application up and running in a hospital. So it's an economical system.

During the past year there has been a substantial change in the management of the Veterans' Administration, a new Administrator, new Chief Medical director, a new Director of the Medical Information Resources management office as well as myself as the Associate Deputy Administrator for Management.

We took a look at the applications. We took a look at where we were going because we wanted to make sure we had the right priority on the applications development and we wanted to make sure we were doing the things that had the most impact on the quality of care. We did prioritize the applications and identify the Decentralized Medical Management System as one of the top priorities.

This conclusion is fully consistent with two GAO reports on our financial activities and this conclusion was also supplied to the Senate Appropriations Committee in a report last fall.

The Decentralized Medical Management System reports what is happening in the hospital as it relates to a patient, as it relates to diagnostic groups, as it relates to resource allocation, and it provides that information based on clinical data which is collected throughout the hospital. Each of the clinical applications that we have established as our priorities is designed to improve medical care and service to the veteran. They include radiology, dietetics, medical records tracking, surgery, nursing, integrated funds control and mental health.

Funding for the first four applications was provided in the fiscal year 1987 congressional appropriation. A request for proposals has been issued to upgrade our computer facilities for each of the DHCP systems to run these applications. Funding for the additional applications was included in our fiscal year 1988 budget. We had the accounting firm of Price-Waterhouse review the applications to determine if there was a cost benefit to the agency and they found a 9.8 percent rate of return to the Government. So we are making money when we run these systems in addition to improving quality of care.

These applications along with what we currently have installed form the 18 applications which make up the 1987 cost estimate shown on the chart. This also forms the basis of the President's fiscal year 1988 budget request.

[Charts used by Mr. David A. Cox appear on pp. 160–163.]

Now in regard to the integrated hospital system, in 1983 at the request of Congress, we were asked to test and evaluate commercial systems and compare them to the Decentralized Hospital Computer Program. We installed systems in Philadelphia, Saginaw and Big Spring, Texas. The systems were acquired competitively from commercial vendors. We had a procurement to determine which vendors could supply the best hardware and software combinations to the medical centers.

The system's architecture that each of the winning vendors proposed to install was different. What was the same though were the types of applications that were planned to run at those centers and they were the applications for the same functional areas as the 18 that we have identified as our priority, those 18 are running on 3 commercial sites that we are evaluating.

Booz Allen evaluated the life cycle cost of the 18 applications that we are going to be running and the 18 applications that the vendors are running across a 10 year period, which is fully consistent with all GAO, OMB and GSA guidance on life cycle costing. The cost effectiveness comparisons were made and the costs showed that DHCP cost $777 million over 10 years versus approximately $1.5 billion for the commercial systems over the same period.

Booz, Allen & Hamilton recommended that we continue with the DHCP program. They concluded that the DHCP program provided the best foundation for future information systems. Our strengths lie in the fact that we have specific functionality. In other words, we provide the services that our VA physicians need to get the job done. We provide a good methodology for developing quality systems. We involve all of our users through special interest user groups.

The Booz, Allen & Hamilton study also had a number of recommendations relative to correcting what they identified as program deficiencies. We have implemented all of those in addition to ones that have been identified by our Inspector General and by Price-Waterhouse.

In summary, the Veterans' Administration has the resources, the talent and the motivation needed to meet the requirements of our medical centers, not only today but in the future.

I'd like to take 1 minute to summarize with two charts. The first one shows the infrastructure that we have in place today to support a massive medical system that we are running. This is important because today we have in place over 18,000 terminals, 9,000 printers, thousands of miles of cable stretched among the campuses we have. We have over 180,000 man days of training built into this system; 1,200 man years of programming. We have the procurement infrastructure, the personnel, the recruiting and the facilities in place to support DHCP and are doing it every day for 164 systems serving 225 facilities. Nobody else has that capability.

The second chart that I would show you shows the status of where we are today. The software development is shown in orange. The green represents when we are going to get the actual machines to run that software. What is important to note about that chart is that with the exception of the centralized medical management system which will be available in the fall. All the software is running and being run in beta sites, test sites. Some of it is completed and on the shelf. We have our software. It is on the shelf for us ready to be used.

What we don't have is the hardware. We are in a procurement right now to get that hardware so we can run it.

The gap, where you see no colors, represents two things to me. It represents a loss of the improvements that we can bring in the medical centers to improve the quality of service to our veterans. It represents a loss in the economic benefits that comes from running a system that gives you a 10 percent return on every dollar that you spend. It's important in this context also. Every day, every 2 seconds of every day, a new veteran walks in to get some service from one of our centers. Every 2 seconds someone is coming into an outpatient clinic or applying for inpatient care. We lose a lot of opportunity to provide better service if we delay that procurement, if we delay what we are trying to accomplish with DHCP.

Mr. Chairman, thank you very much for giving me the opportunity to make these remarks.

[The prepared statement of Mr. Cox appears at p. 154.]

Mr. MONTGOMERY. Thank you, David Cox. Dr. Gronvall and Mr. Cox, those were very strong statements. I wish everyone could have heard those statements. It just doesn't make any sense to me to scrap a system, as I said in my statement, that is in place.

Are any of the House Appropriations staff persons in the audience? Would you hold up your hand if you are here?

[No response.]

This is sad. They ought to be here.

Thank you again. Dr. Gronvall, I've always been of the feeling that you have to give of yourself in Government in any type of job, you give an individual the responsibility and it is his or her responsibility to make things work and what you have said here today is that maybe the system is not perfect, you didn't say that, but the system is in place and working. You don't want to start all over again. You are the man in charge.

Is that what you are saying?

Dr. GRONVALL. Yes, sir. The basic concept of the decentralization of responsibility that our computer system has followed is consistent with what we have done in other areas, namely to hold the people at our individual medical centers accountable for delivering care to veterans. Obviously that always has to be done within a framework that is national, that sets overall priorities, the mandates for care that come out of legislation.

We have found time and again that every program we are operating works better if the local people are given the tools and given the responsibility and then held accountable.

I have an accountability for the entire system but the best way for me to ensure quality of care is to hold medical center directors, chiefs of staff, people at each local medical center accountable and that word is fully exercised and when they have the tools and the accountability, quality of care can be improved and our information systems through DHCP accomplish both of those objectives.

You used the term "not perfect" and I would never say it's perfect There has been much criticism. We have taken steps to deal with all of those criticisms but the system is in place, running, and in my view is an overwhelming success.

Mr. MONTGOMERY. I like the idea of having responsibility down at the different hospitals and outpatient clinics. We will have some of these people who have the responsibility with the computers also testify.

Thank you. Dr. Rowland?

Dr. ROWLAND OF GEORGIA. Thank you, Mr. Chairman. I'm surprised, too, that there is not someone here from the Appropriations Subcommittee staff.

Let me ask you a broad question, Dr. Gronvall. In your view, what impact would there be on VA medical centers if we converted from the DHCP to the IHS system?

Dr. GRONVALL. If I may, Dr. Rowland, it will take me I think a few minutes to describe my assumption of what would happen. The first thing of course would be that I would have to tell every one of our medical center directors and every clinic director that no further enhancements of the existing computer system could really be possible because we wouldn't want to invest further funding support in an existing system.

We would then set about to develop an RFP that would describe the needs of our 172 medical centers and all of our clinics. The best estimate that I've heard for that development is it would take at least 2 years to reduce to writing a request for proposals to seek a vendor that could make a contract proposal to computerize all of our medical centers.

Furthermore, the best estimate that has been given to me by experts in the field is that once we went through that 2-year period, it would be an absolute minimum of 4 or 5 or more years after that, that computer systems and software systems would actually be developed on a national level and installed and put into operation in our medical centers to get back to the current level that we enjoy.

I think an even greater problem in my view would be the very negative—and I think it's fair to say devastating—effect that would have on the morale of the many people, many of whom the committee has talked to, who have truly invested major effort in developing the existing computer systems and looking for ways that those could be used effectively at the local level in some very direct ways to improve the quality of medical care that is going on in our medical centers.

I'd like to develop one other aspect of an answer to your question and that has to do with the flexibility that I as Chief Medical Director have to accommodate new developments in our hospital system. The best example is the recent enactment of the new means test legislation, a major revision, codification of eligibility for health care.

When that legislation was passed last spring, it was a simple and direct matter for me to turn to our VA computer people and direct them to begin immediately taking the step to develop the software systems necessary so that we could implement and administer the means test operation using computer information support. The law went into effect on July 1st. It had been passed late in the Spring. That was an inadequate amount of time for us to fully develop, test, the software systems necessary but by October of 1986, in other words, within a period of less than 6 months, we were able to successfully develop and implement our own computer software program in all DHCP sites to assist us in administering the means test.

I could make the comparison with the three IHS sites where we are working with commercial vendors. At two of those sites, the local medical center worked with the vendor and was able to get the vendor to develop a software package within that amount of time. Unfortunately, at a third site, Big Spring, Texas, we still do not have a vendor provided software system that allows that medical center to operate the means test using a computer system and to the best of my understanding, the development of the software package has not even begun because it required an amendment to the contract and there have been negotiations between the VA and the vendor, Electronic Data Systems, carried out through contract people. We have been ham strung in our effort at that medical center to be able to develop a computer system for administering the means test.

In short, it appears to me to be extraordinarily important that we have the flexibility as priorities change and new needs come along, new legislation, to be able to direct the development of these systems to assist us in administering the hospitals and if we had a nationwide system all provided by a single contract vendor, we would lose that kind of flexibility which I think would be an enormous set back.

Dr. ROWLAND OF GEORGIA. Then I believe we could safely say there would be a significant adverse impact on the quality of care delivered to the veterans who are patients in VA medical centers.

Dr. GRONVALL. In my judgment, that is absolutely correct.

Dr. ROWLAND OF GEORGIA. Mr. Chairman, I do have some additional questions but Dr. Gronvall used up all my time. I guess I'll yield at this point.

Mr. MONTGOMERY. We will come back to you.

Dr. ROWLAND OF GEORGIA. Thank you.

Mr. MONTGOMERY. Claude Harris.

Mr. HARRIS. Thank you, Mr. Chairman. I just would like to state that at a time when this Congress is looking at every nook and corner trying to find additional money to run the Government, it is just surprising to me that anyone would want to come in and scrap a system with as much money as has been spent already and it is in place, working, and all the man hours that we would lose in having to re-do it I just can't understand it. I don't have any questions. I just wanted to make that statement.

This member certainly is strongly supportive of leaving it like it is.

Mr. MONTGOMERY. That's what I've been saying. I don't understand it. It doesn't make sense. Something is wrong out there. I hope we can get to the bottom of it.

Mr. Bilirakis?

Mr. BILIRAKIS. Thank you, Mr. Chairman. I apologize to you and to the panel for my tardy arrival.

Dr. Gronvall, and I guess Mr. Cox, on page 2 of Mr. Corum's testimony, he indicates great surprise, quote "When on February 9, 1987 the VA announced that it planned a phase out of the IHS' and intended to pursue full implementation of DHCP." This date of course being prior to the September date when the test period was to expire.

Please give us your comments on this.

Dr. GRONVALL. I'll give a very short comment and then Mr. Cox can expand. Based on the external analysis by Booz, Allen & Hamilton, it appeared to us that it was overwhelmingly more cost effective to proceed with DHCP. The inevitable consequence of that judgment then would be that we should begin to plan for the orderly phase out of the IHS test sites and conversion of those to DHCP. No steps have been taken to implement such a decision. That was a judgment expressed by the VA that that would be the rational thing to do having come to the judgment that DHCP is more cost effective.

Mr. Cox?

Mr. COX. Yes. I'm amazed that he was surprised. I personally met with him and his staff. I went to St. Louis in fact, to the McDonnell Douglas headquarters, to review the system. I went to Saginaw with his staff to review the system there and told them at that time that Booz, Allen & Hamilton was doing a study which was a comparative assessment of the two systems. Further, the Booz, Allen & Hamilton team interviewed over six members of the McDonnell Douglas' team during the month of November. I can't speak to why he would be surprised. I certainly wasn't surprised because I——

Mr. BILIRAKIS. When did these conversations take place?

Mr. COX. I visited McDonnell Douglas the last 2 days of October. The Booz Allen people interviewed everybody, told them the purpose and the reason they were conducting the study and what was the basis. The Booz Allen study is a 2 part study. The first part of the study was to be concluded in January/February of this year, which it was, which was to assess the difference between the systems. The second part of the study, depending upon what the assessment found, whether to go DHCP or IHS, was to develop a transition plan for that.

At the time I was asked on February 9th in a briefing to the committee staffs as to what we were going to do since we found that DHCP was less expensive, I indicated that the thing to do as

Dr. Gronvall said was to transition everyone to DHCP and we would develop that plan. That was a briefing to the staff people at that time.

Mr. **Bilirakis**. The test period was a contract that was let out. I'm sure some of these things were probably covered before I came in and I apologize if there is any repetition. There was a contract. The contract was due to expire—the test period was to run through September?

Mr. Cox. The contract was for prototype sites to be run by the centers. There were no guarantees implied. In fact, it was very expressly stated in the contract that there was going to be one system awarded. There was no guarantee of any further awards to any of the vendors. Everything was to the VA's option from that point on. That was stated in the request for proposals and was incorporated into the terms of the contract agreement.

Mr. **Bilirakis**. The VA has paid for this test period for the entire period of time; has it not?

Mr. Cox. Yes, sir, and we are doing that and in fact the funding for the test is in our 1987 operating plan and was included in the President's fiscal year 1988 budget. There was no reduction in funding for that test at all, consistent with the wishes of the Congress.

Mr. **Bilirakis**. Basically I guess what you are saying is you—I don't know whether you came to an opinion or not—but you did not really come to a final decision? I concur with my colleagues' comments here, "I don't know if something ain't broke, why fix it" and also you appoint someone like Dr. Gronvall to run the program and I'm not sure why we are interfering unless we know there are problems. In any case, it was deemed by some wise "source" that there should be test periods contracted out.

Is it right that we make a decision or came to a concluding judgment prior to that test period having run its course?

Mr. Cox. The conclusion is very appropriate, and let me tell you why. First of all, each of the three vendors can meet the basic functional requirements that we have. The cost information is clear. The cost is clearly in favor of DHCP. The judgment that was made was made so that we—we knew what the information was and it was a very simple decision to make.

The problem, quite frankly, arose that with the decision made, the procurement documents on the street, we were instructed to stop the procurement using the 1987 funds that we have, and here we are now in a position where we are moving along consistent with the funding that we have from the Congress, consistent with the approvals that we have from the General Services Administration, and people are saying that we should stop.

We have done everything that the Congress has asked us to do. We have done everything that the Federal Government requires us to do, both in letter and in spirit, in terms of preparing for these procurements, and the decision was very, very——

Mr. **Bilirakis**. So by stopping at that point, you have saved the balance of the funding that ordinarily would go to pay for the test program, is that right, test contract?

Mr. Cox. I think we should keep the test programs in place until we are ready to transition them to the DHCP system, but we would save whatever money accrued from that point on. I would suggest that with $25 million, which is what we have spent so far on those three tests in 3 years, we could do a heck of a lot of documentation and a heck of a lot of quality testing and a heck of a lot of training.

Mr. **Bilirakis**. My time is up, sir. I do have another question or two when you come back around.

Mr. **Montgomery**. We will come back to you.

Mr. **Bilirakis**. Thank you.

Mr. **Montgomery**. Let the Chair follow up on Mr. Bilirakis on that questioning. As I understand it, what you have told us, Mr. Cox, is that there was a misunderstanding with you and several of the vendors that you were getting ready to cut off the test. Now, from my personal experience of working with the Defense Department, we had problems getting them to let the vendor test at all.

So I would hope that you would not be unreasonable as far as testing for 5 or 6 years but to give these vendors, these persons who do come in and put this equipment in, give them the opportunity to run a fair test.

Mr. **Cox**. Yes, sir. All terms and conditions of the contracts will be fully honored. There is no issue there at all. We never expressed to any of the vendors, either directly, in writing or personally, that we were curtailing their test. The only issue that was ever raised was the question was asked to me by staff of what would you do with those three IHS sites if you decided to go with DHCP? I said we would phase them into the DHCP system, and that is what we would do by going with DHCP, and we would develop the details later. That was communicated back to staff in writing by me.

Mr. **Montgomery**. But you hadn't tried to stop any of the testing?

Mr. **Cox**. Absolutely not, sir.

Mr. **Montgomery**. Okay. I have one question and then I will yield to you, Dr. Rowland.

The DHCP has been criticized for not providing some of the features offered by commercially available systems. Will you comment on this?

Mr. **Cox**. It is true. We don't have some of the features that are offered by commercially offered systems, but we have all the features that have been requested by the VA medical practitioners and the technicians that work in our VA hospitals. Those requirements were developed by them in the special interest user groups, and the software we developed supports exactly what they have asked for.

So to the extent that we don't provide features which might be used in a commercial hospital or in the Hospital Corporation of America, that is true; but we do meet all the requirements of the Veterans' Administration.

Mr. **Montgomery**. Dr. Rowland.

Dr. **Rowland of Georgia**. Thank you, Mr. Chairman.

As I understand it, Dr. Gronvall, the House Appropriations Committee staff conducted an investigation of the VA Medical Center computer system. Has the VA done an analysis of that investigation?

Dr. **Gronvall**. Yes, sir.

Dr. Rowland of Georgia. Could you tell me who requested that analysis?

Dr. Gronvall. We recently had a formal request from Senator Cranston asking for comments on the report that you referred to. Our own staff within the VA had developed an analysis, and we just recently responded to Mr. Cranston's letter and provided a detailed point-by-point commentary on the report.

Dr. Rowland of Georgia. Where was that distributed, the analysis?

Dr. Gronvall. I believe that, other than within the VA, the only place externally that it has gone has been to Senator Cranston since he asked for it. I may be in error.

Mr. Cox. I can give you an update on that because Senator Cranston's office asked it be distributed to all the committees, and our Congressional Affairs staff has been doing that. I have an additional copy here with me as well.

Dr. Rowland of Georgia. Can you very briefly give me what your findings were?

Mr. Cox. Yes, sir, I will give you a few, and Dr. Gronvall may want to contribute also on this. The primary finding was that the report offered nothing new in the way of criticisms, and things were raised by the Inspector General, Price-Waterhouse and other people. The only difference between this report and others is that it was the only report that didn't conclude that we should continue with DHCP.

All the issues that were raised as deficiencies, we have corrective actions either under way or they have already been completed. Dr. Gronvall can speak to each of those as he has directed and overseen most of them.

We have responded to everything that was identified in the report. We find many of the arguments to be specious, to be antedated and in most cases they are ancient history. They are things that did occur 18 months ago, 24 months ago, but they are not occurring today.

There are other areas where we know we have some work to do to get better in terms of some of the things we are doing, and we are doing that work, but that is attributable to the growing pains of installing 164 systems in 3 years.

Dr. Rowland of Georgia. So the deficiencies that were found, most of those have already been addressed, then.

Mr. Cox. Oh, absolutely. Dr. Gronvall may want to comment.

Dr. Gronvall. Yes, I totally agree. One important centerpiece, I think, of criticism both in that report and other reports has been that we had an inadequate level of central office control over the process of developing software packages, reviewing, testing and approving those before putting them into operation.

Before that current report was published, we had taken steps to restructure the organization of our management information staff. Back in December of 1986, the Administrator signed off on a recommendation that I made that gives our central office, headed by Mr. Van Hooser, line responsibility over the information system centers around the country that we utilize to develop new software packages.

So we have strengthened our central office control, priority setting, testing and approval of software packages before they are placed into operation.

Dr. Rowland of Georgia. Mr. Chairman, I would like to request that a copy of this analysis be made a part of this hearing record.

Mr. Montgomery. Without objection, so ordered.

[The information referred to appears at p. 164.]

Dr. Rowland of Georgia. One other question that I have. Could you comment on the IHS test in relation to the DHCP?

Dr. Gronvall. A quick comment. That has demonstrated that the approach envisioned in IHS can meet the needs of a medical center. I think there is no argument about that. It has also demonstrated to my satisfaction that the approach of IHS is significantly more expensive, and we have also had now the dramatic experience I referred to in Big Spring in attempting to develop a new package that would allow us to implement the means test.

We have seen the well-recognized truth that when you are dependent on an external contractor, any time you need to develop something new or different, that requires amendment of the contract, which is a highly formal process that takes time. There is no way very effectively to control cost. If you are dependent on a single contractor and you have to amend the contract, there is no real way to competitively bid those contract amendments.

So we are still unsuccessful at one of the IHS sites in developing software to implement a mandated new program as a result of legislation.

In summary, the IHS test has shown it can work. It is more expensive and it significantly reduces the flexibility that I have as Chief Medical Director to redirect and redeploy computer efforts as time and priorities change in our hospital system.

Dr. Rowland of Georgia. I want to thank all of you very much for your testimony.

Thank you, Mr. Chairman.

Mr. Montgomery. Thank you, Doctor.

Let the Chair say if there is no objection, I recognize Mr. Bilirakis. We appreciate Tim Penny being here this morning from Minnesota. I will recognize you for 5 minutes, and after your 5 minutes, we need to get over and make this vote. If there is no objection from committee members, we will excuse our witnesses. I hope someone in that group would stay here, though, and listen to the testimony of the other witnesses.

So if there is no objection, then after you, Mr. Bilirakis, then you will be excused and the next witnesses will come to the table and we will be back in about 15 minutes.

Mike.

Mr. Bilirakis. Thanks, Mr. Chairman. I will have a number of questions that we might submit for answer.

Mr. Montgomery. Without objection—I also have some—questions from members will be submitted, without objection.

Mr. Bilirakis. Very quickly, and maybe it can't be answered very quickly, Dr. Gronvall and staff, is there widespread user dissatisfaction in the VA with DHCP?

Dr. GRONVALL. I am aware of no significant user dissatisfaction other than the strong desire to get on with it more quickly and expand the capability more quickly.

Mr. BILIRAKIS. Well, the information that I have is that there is widespread user dissatisfaction, and apparently—well, you hate to put words in somebody else's mouth who may not be here, but I understand it is coming from the appropriations committee staff. Why would they come to that conclusion?

Dr. GRONVALL. They would have to describe where they got that information. All I can describe is the conversations I have with medical center directors, with staff, with dozens and hundreds of people that I bump into who report strong satisfaction with the DHCP system.

Mr. MONTGOMERY. Will the gentleman yield?

Mr. BILIRAKIS. Yes, sir, certainly.

Mr. MONTGOMERY. The staff of the House appropriations committee subcommittee knew about this hearing and must not have much interest as far as they have no one here, unless someone else has come in, to hear the testimony.

Mr. BILIRAKIS. Is there anybody here who would like to speak up at this point? They are in hearings this morning, apparently.

Mr. COX. I would just add one comment. The Price-Waterhouse team conducted approximately 150 interviews. The Booz-Allen team conducted approximately 150 interviews. Our IG conducted a comparable number as they went through. Universally and consistently, they said the greatest strength that they found was the high degree of user satisfaction. In fact, Price-Waterhouse and Booz-Allen both said it was higher than anything that they had seen in other systems they had evaluated. That is a disinterested set of third parties reacting to it.

My personal observations and conversations as I have visited medical centers echoes that completely. I have not heard of the dissatisfaction.

Mr. BILIRAKIS. Dr. Gronvall, you are a medical doctor, and certainly I am not trying to take away from the rest of the people on the panel, but I know you care about good medicine, and obviously these computers are needed in relation to that.

Would you ever be a party to any kind of gag orders or a coverup or anything of that nature? Our staff has apparently made efforts to try to find people in the VA who are dissatisfied or opposed to the current system and are apparently having problems doing it, but could that be the result of any gag orders or coverups?

Dr. GRONVALL. No, sir. I have taken no steps to try to tell anybody what to say. There are two reasons for that. One is that I believe people should be free to speak. Secondly, if I tried to gag several thousand people, I believe that information would be quickly communicated to you and you would know I had tried it.

The people from our medical centers who have been invited here by the committee today are free to speak the truth as they see it. I have talked to none of them about what they are going to say or how they are going to say it or what questions they are going to be asked, and my staff has not in any way attempted to program what they will tell you. I want them to speak the truth as they see it.

Mr. BILIRAKIS. Thank you, sir. There are so many other questions, but we will be submitting them later on in the interest of time. Thank you very much.

Mr. PENNY. Mr. Chairman.

Mr. MONTGOMERY. Tim.

Mr. PENNY. Just for the record, I want to indicate that Tom Mullon, the Administrator of the VA hospital in Minneapolis, called my office to indicate their concern about this issue and to express that they are upset about the prospect of further delaying the implementation of the Decentralized Hospital Computer System. They feel that the delays that may be caused by efforts to convert this to the Integrated Hospital System could cost them substantially in the delivery of quality care to their patients.

So I felt it important to express that concern for the record and make it clear to the chairman that at least somebody out there on the delivery end is quite concerned about this issue and supportive of our committee's efforts on this matter.

Mr. MONTGOMERY. Thank you. I wish you would tell that to Mr. Boland also.

Mr. PENNY. Mr. Chairman, I will definitely communicate that to Mr. Boland.

Mr. MONTGOMERY. I think that would really help.

Is there anything else?

[No response.]

The committee now stands in recess for about 10 minutes.

[Recess.]

Dr. ROWLAND OF GEORGIA [presiding]. Gentlemen, thank you for being here, Mr. Block, Mr. Seufert and Mr. Swedberg. We look forward to your testimony. Proceed in any manner that you so desire.

STATEMENT OF BRUCE J. BLOCK, VICE PRESIDENT, BOOZ-ALLEN & HAMILTON, INC., ACCOMPANIED BY DANIEL SWEDBERG, SENIOR ASSOCIATE, AND GERARD SEUFERT, ASSOCIATE

Mr. BLOCK. Thank you, Mr. Chairman.

It is a pleasure for myself and my colleagues to be here this morning. To my left is Dan Swedberg, the program manager for our study, and Jerry Seufert, a senior member of our technical staff.

I have a written statement that I will submit for the record that describes the study we have performed for the Veterans' Administration, but I would like to briefly summarize that statement.

First I would like to explain who we are and describe our qualifications for conducting the study. Booz-Allen is one of the oldest and largest management and technology consulting firms in the world. We serve both government and industry and are the consultants of choice to the top managers of many of the world's major corporations and have served nearly every Federal agency over the last 30 years.

The DHCP and IHS comparability study was conducted by a ten-person project team from our Management Consulting Division, a division that specializes in conducting management studies for Federal civilian agencies. Areas of expertise represented by the team members included strategic program planning and evaluation, health care management consulting, information systems cost analysis, hospital information system development and implementation, Federal ADP procurement and systems development, and finally, intimate knowledge of the VA's Department of Medicine and Sur gery Programs.

The study that we were asked to perform by the VA was a strategic assessment of the DHCP and IHS approaches for providing future information system support to VA medical centers. We were asked to determine whether one or the other approaches should be pursued in the future by the VA based upon a comparison of program life cycle costs, benefits and operational efficiency and effectiveness.

To do so, it was necessary first to establish a framework for comparing the two approaches. That framework was required because the current DHCP and IHS programs, the focus of this study, have different requirements and are not directly comparable. To compare them, it was necessary to develop a common set of requirements and to define two future program scenarios for meeting those requirements.

The two future program scenarios reflected characteristics of the current IHS and DHCP approaches. Subsequent assessments used data about the current DHCP and IHS programs to project comparative cost effectiveness under the two scenarios.

Three primary sets of findings support the conclusions presented in the study. The first set deals with the comparative levels of effectiveness of the two approaches. We found that systems provided under both approaches have strengths and weaknesses. DHCP is stronger in the area of functionality. IHS is stronger in the areas of systems engineering and integration.

The IHS approach under its postulated scenario was also found to be more effective in providing required support services and management support.

The second set of findings is life cycle cost findings. We estimated that DHCP life cycle costs are approximately $777 million and that IHS life cycle costs are approximately $1.5 billion. The IHS approach was found to be significantly more costly in meeting the common set of requirements based upon current operations and the postulated scenarios.

The third set of findings is cost-effectiveness findings. In general, those findings are mixed and do not indicate a clear-cut choice between the two approaches. Both approaches have cost-effectiveness strengths and weaknesses.

To determine which strengths and weaknesses were more important, we looked at their effect on three factors: user acceptance, ADP program risk, and funding requirements. From that analysis we determined that the DHCP approach represented the best foundation for future cost effectiveness. We believe that it will result in higher levels of user satisfaction and lower funding requirements.

However, based upon the status of the program as we observed it commencing in October 1986, we found that changes are required in the DHCP approach to address necessary requirements for future success. Those requirements reflect more emphasis on systems engineering and integration, enhanced support services, and more centralized management support.

We believe that more formalized methods of system development, implementation and operation will be required as DHCP begins to mature in the future. It is our understanding that the VA has already begun several new initiatives to address these needs of the future.

Thank you, Mr. Chairman, for allowing us to make these remarks.

[The prepared statement of Mr. Block appears at p. 191.]

Dr. ROWLAND OF GEORGIA. Thank you very much, Mr. Block. I have one question that I would like to ask. Does anyone else have a statement there?

Mr. BLOCK. No, Mr. Chairman.

Dr. ROWLAND OF GEORGIA. I have a question, Mr. Block. I am certain that you are aware that the appropriations committee thinks the Booz-Allen report has been biased towards the DHCP by specific direction of someone in the VA. Would you answer that allegation?

Mr. BLOCK. Booz-Allen's reputation lies in our complete objectivity as we approach every study. This study is no different. We never have and never will be influenced by a client. We do our analysis, we do our study, and the results speak for themselves. In no case were we influenced at all.

Dr. ROWLAND OF GEORGIA. In your estimation, then, did your report accurately and fairly reflect the performance of the three IHS demonstrations?

Mr. BLOCK. Yes, Mr. Chairman, I believe it fully does.

Dr. ROWLAND OF GEORGIA. Did the Booz-Allen staff personally go to Saginaw and look closely at the McDonnell Douglas system there?

Mr. BLOCK. We visited all three vendor sites as well as four DHCP sites, as well as did a mail survey questionnaire with 21 additional DHCP sites. We visited all three IHS sites.

Dr. ROWLAND OF GEORGIA. I will yield to the chairman at this point.

Mr. MONTGOMERY. Thank you, Mr. Chairman.

Mr. Corum of McDonnell Douglas stated in his written testimony for today's hearing that he presented data to you to reevaluate their original 1984 bid and their proposed innovative approach with supportive documentation. Was that presentation used in your evaluation of the DHCP IHS system for their cost?

Mr. BLOCK. In carrying out the comparison, we started out with data about the current systems, the systems that are in place today, and developed scenarios that reflected those characteristics. One of the characteristics of those systems is that each VAMC, VA medical center, have its own computer system. We carried that forward into our scenario as a requirement for either DHCP or IHS.

In meeting with the different vendors, we told them to feel free to identify areas where we could have less costs involved in the scenarios, and McDonnell Douglas, I believe, did give us a scenario where there would be a more centralized system. In our opinion as we looked at that and we compared that with DHCP, we believed that the same decreases in cost and the same impacts on the effectiveness of the system would be found whether it was in the DHCP system or IHS. Therefore, for our comparison, it really wasn't important to focus on that specific alternative.

Dr. ROWLAND OF GEORGIA. Mr. Bilirakis.

Mr. BILIRAKIS. Mr. Block, has your firm ever done work for the Veterans' Administration in the past?

Mr. BLOCK. Yes, sir.

Mr. BILIRAKIS. You had. And, of course, the bill was paid by the Veterans' Administration.

Mr. BLOCK. That is correct.

Mr. BILIRAKIS. Whatever that fee is, is that part of the $25 million that we have heard spoken about earlier this morning? We heard $25 million, I believe, for the test contracts, the three test programs. Is that correct?

Mr. BLOCK. It is difficult to tell you what appropriation that our funding came out of. I would assume it did not come out of the same money that was allocated for the IHS test. I do not know.

Mr. BILIRAKIS. You don't know. Really it is not that significant, but how much were you-all paid for this study?

Mr. BLOCK. The cost for the study from the commencement of the study through the delivery of the final report was approximately $450,000.

Mr. BILIRAKIS. $450,000.

Mr. Chairman, I guess we should all approach these hearings open minded and that sort of thing. Obviously, what is the sense of even holding a hearing if you can't be open minded and yet I am trying to figure out here what in the world we use $25 or $30 million for that could have been used for medical care of veterans and what not.

I am not trying to take the position here that the McDonnell Douglas system is not a better system or anything of that nature, I am trying to be open minded but I guess I am trying to find out what started all this. How did it get started?

Out of the blue, we decide that we have a system that seems to be working all right and out of the blue, we just decide to blow that kind of money when we are tight and we are asking everyone all over the country, veterans and others, to tighten their belts.

I don't know whether this should be addressed by us, but I would like to find out a little more about it.

Dr. ROWLAND OF GEORGIA. My understanding is that what took place is that they got the authorization from this committee and the Senate committee and it came to the appropriations process and it was decided in the Appropriations Committee in the subcommittee, that perhaps the DHCP was not functioning as it should and that we needed to look more at the three demonstration projects that we had.

We had DHCP in 169 hospitals. There were three hospitals that had the commercial systems in place and it was decided that maybe we needed to take a look, Congress needed to take a look at these other systems and there was consequently a holdup on funding for DHCP, no more money was to be appropriated for DHCP, until these other systems could be looked at.

That was the way that I understood the scenario. So the problem at this point is that that money is being held up and it seems to me that we ought to be able to proceed with the system that we have in place and not disrupt that, go ahead and look at these other three projects if necessary but the real problem at this point is that the Appropriations Committee is holding up funding for DHCP at this point.

That is my understanding, Mr. Bilirakis.

Mr. BILIRAKIS. I guess there are names and words for something like that, aren't there and I suppose none of us will ever get anything through the Appropriations Committee again. We are the Veterans' Committee and we are supposed to be the people who should be the specialists as much as we possibly can be considering the limited period of time we have to apply to these things.

I am not sure that the Appropriations Committee ought to be telling us what to do as far as the VA system is concerned and for that, I know I won't ever get anything through the Appropriations Committee.

[Laughter.]

Mr. MONTGOMERY. Would the gentleman yield?

Mr. BILIRAKIS. Yes, sir.

Mr. MONTGOMERY. It is totally confusing. We are proud of the employees of the Veterans' Administration that took the initiative that sometimes federal employees don't take. They developed this software system for other computers and the de-centralized hospital computer system in the VA and we ought to be complimenting them and we ought to be moving ahead.

Now we have these problems. Thank God the Nation will survive and we will move on to something else but it is important that we don't stop now and I am surprised at some things that have happened in that the Appropriations Committees, both in the House and the Senate—Senator Proxmire signed this letter as well as Mr. Boland—which just stopped us dead in the water. It doesn't make any sense at all.

Mr. BILIRAKIS. May I continue, Mr. Chairman?

Mr. MONTGOMERY. You may.

Mr. BILIRAKIS. Thank you. Very quickly, Mr. Block, you have elaborated on the changes needed in the current system, DHCP, in the areas of management support, et cetera. Have you run into any obstacles, any opposition at the VA? In other words, do they look like they are open minded about that and does it look like they are going to be cooperative in terms of making the changes that might be necessary provided that their system remains in effect?

Mr. BLOCK. Every indication that we have from the Administrator on down is that they are dedicated to making DHCP work. It is our understanding that initiatives have already been put in place to correct some of the deficiencies that we have cited in the report.

Mr. BILIRAKIS. I see. Does your contract provide that you continue working with them regarding some of your recommendations and your suggestions or is that going to take additional time and additional money if you will?

Mr. BLOCK. There is an option in the contract for additional effort for a phase two if the VA so decides.

Mr. BILIRAKIS. Sir, just one final question. You said in your summarization remarks if you will, "Changing to the IHS approach would likely result in both lower user acceptance and higher program costs."

Are you saying that the VA users would not accept any of the vendor IHS systems if they were determined to be most effective? Are you saying that they would not accept any or are you saying that there would be some opposition to accepting?

Mr. **Block**. In my opinion changing from one system to another would entail as it does in many endeavors a changing in people's perspectives. When people are comfortable with one system and they then have to replace that with another, there is a significant time it takes to change training, learning, documentation, a number of other support factors.

So there would be a definite period of time during which productivity in using the system would go down. It is our opinion that there will be a significant period of time before user acceptance would be brought back up to the level it is right now for DHCP.

Mr. **Bilirakis**. A general statement then. Thank you.

Mr. **Montgomery**. Would the gentleman yield to follow up and so I can get this on the record?

Mr. **Bilirakis**. Sure.

Mr. **Montgomery**. In case the VA system has to be junked, besides the thousands of man hours that are going to be lost in retraining, I want the record to show that it is going to cost a ton of money to put these new systems in and I want it to be clear that the responsibility will have to be in the House Appropriations Committee as well as the Senate Appropriations Committee. They have to be ready and willing to fund all this money and to stand up and defend it if they are getting ready to charge the taxpayers over $1.5 billion of extra money by calling for this new system.

I just wanted to get that on the record, Mr. Chairman.

Mr. **Bilirakis**. Thank you, Mr. Chairman.

Dr. **Rowland of Georgia**. Thank you, Mr. Bilirakis and thank you, Mr. Chairman. Mr. Block, historically the VA ADP systems have had to be modified extensively because of changes in legislation and executive order.

How would these changes be handled under an IHS contractor mechanism?

Mr. **Block**. In our opinion they would be handled in a similar way to any change in contract scope. New requirements would have to go through the standard procurement process, a scope change issued to the contractor, response with a technical proposal and response with a cost proposal and subsequent negotiations of that cost proposal.

Dr. **Rowland of Georgia**. Isn't it quite possible with negotiations it would cost a considerably larger sum of money or additional money to have to deal with these changes that we may not experience in DHCP? That is a prejudiced question.

Mr. **Block**. In any contract situation, as you increase scope you increase cost, but it would occur on the DHCP side as well. If legislation has a new piece to be added, a new module to be added, a new capability to be added, there is work then that would have to be put aside or additional staff put in place on the DHCP side to deliver that module. So there would still have to be staff work done on the DHCP side to deliver that same capability.

Dr. **Rowland of Georgia**. Mr. Block, would you explain the following statement that you made in the executive summary of your report regarding the potential impact of changing from a DHCP to an IHS approach at this time. That statement is: "We do not believe that a change of this magnitude is necessary nor do we believe that it would be the most cost effective approach for the future. Changing to the IHS approach would likely result both in lower user acceptance and higher program costs. The loss in cost effectiveness would be significant and might never be regained."

How many years would this type of change require before the VA would achieve its current capability in your opinion?

Mr. **Block**. In our opinion if the decision were made in the near term to shift to IHS, it would be probably in the 1993–1994 time frame before a system, a full IHS system, could be implemented at all 172 medical centers.

It would then take some time, a year, 2 years, 3 years, before all of the staff are retrained to utilize that IHS system and are comfortable with it and are working with it so it would probably be the entire life cycle that we have discussed in the report.

It could be as long as 6, 7, 8 years from the time that you make the decision to go IHS until there is this same level of user acceptance for IHS as there is today for DHCP.

Dr. **Rowland of Georgia**. I believe we heard Dr. Gronvall say around 7 years is what he thought it would take and you are saying about the same length of time.

Mr. **Block**. Yes, sir.

Dr. **Rowland of Georgia**. Mr. Block, explain your rationale for stating in your report that, "DHCP will continue to have the advantage of producing functionality more consistent with VA medical center specific requirements."

Doesn't this really mean that DHCP will continue to greater effectiveness than IHS for meeting VA medical center requirements?

Mr. **Block**. The issue deals with the different approaches that each system takes to implementation. DHCP is a very user oriented approach to system development. Therefore, the fit and function of the software is directly built to respond to the VAMC users and to the SIUGs. Therefore, the functionality inherently will be greater.

Dr. **Rowland of Georgia**. One other question. The VA plans to deploy DHCP core plus the eight top priority enhanced DHCP modules in fiscal year 1988 and 1989 time frame based on the current hardware acquisition schedule.

You have estimated in your report that IHS deployment will take 5 years from the time of award. What vendor constraints did you consider when you estimated the 5-year deployment schedule for IHS?

Mr. **Seufert**. In trying to postulate how the vendors would go about deploying 172 VAMCs, we looked at the traditional methods of installation of hospital information systems. We also looked at the three IHS sites installed in the VA currently and the capability of the vendors for supporting the VA. By combining those factors, we came up with approximately a 5-year deployment cycle.

Dr. **Rowland of Georgia**. How long would it require to create an RFP and make a contract award?

Mr. **Block**. The real issue is not so much the procurement time itself as it is the time it would take to prepare well-defined requirements and specifications to the level of detail that a vendor would be able to bid on on a fixed price basis.

That would the largest length of time in that whole procurement cycle. The actual time for the development of the RFP itself, the bidder having 60 days to respond, negotiations time, you are probably looking at somewhere between 1 and 2 years at the minimum from the time that that decision was made to the time that an award could be made.

Dr. ROWLAND OF GEORGIA. Mr. Bilirakis.

Mr. BILIRAKIS. I have nothing further.

Dr. ROWLAND OF GEORGIA. Counsel wishes to ask questions.

Mr. McDONELL. Mr. Block, I would like to ask you a question about your evaluation of the DHCP and the IHS. Did you consider a balance in your evaluation of those two types of systems as far as the resources provided by the contractors or the vendors at the three sites versus the resources that had been put into the DHCP by the VA?

Mr. BLOCK. The analysis that we performed was based upon contracted for dollars on the IHS side and for the cost estimates for the effort put in by the DHCP by the VA on the DHCP side.

On the effectiveness issue, it is purely what we observed. If there was extra effort put in by any of the IHS vendors or the DHCP staff, that would appear in the degree of effectiveness in how schedules are being responded to, in terms of management support services, in terms of system support services.

So on the effectiveness side, it is purely what we observed.

Mr. McDONELL. Did you notice whether or not, or did you inform, the VA prior to your evaluation of DHCP, what four sites you were going to visit and did you notice any additional resources being applied to those sites?

Mr. SWEDBERG. What we did in carrying out the study was during the initial weeks of the study we identified criteria to determine the specific DHCP sites we wanted to visit. We wanted to see as much functionality or as many packages as possible. That was one of the criteria.

There were a number of others, including geographic dispersion, those kinds of things. Those criteria were given to the VA and four sites were identified. They were the four DHCP sites that we ended up going to. We did not notice any additional efforts to improve those sites.

Mr. BLOCK. I don't believe so; from the time that we initiated the study until the time that we chose the sites was a very short period of time so that the time frame would not have allowed that.

Dr. ROWLAND OF GEORGIA. Gentlemen, I want to thank you very much for your testimony and without objection, I wish to make a copy of a letter from Booz-Allen dated November 17, 1986 to the Saginaw VA Medical Center a part of the record.

[The information referred to appears at p. 208.]

Dr. ROWLAND OF GEORGIA. Thank you very much.

Mr. BLOCK. Thank you, Mr. Chairman.

Dr. ROWLAND OF GEORGIA. Our next panel of witnesses will be headed by W. T. Corum, who is vice president of Federal Health Systems of McDonnell Douglas Health Information Systems Company. Mr. Corum, thank you very much for your presence here. You may proceed as you so desire.

STATEMENT OF WILLIAM T. CORUM, VICE PRESIDENT, FEDERAL HEALTH SYSTEMS DIVISION, MCDONNELL DOUGLAS HEALTH INFORMATION SYSTEMS COMPANY

Mr. Corum. Mr. Chairman and members of the House Subcommittee on Hospitals and Health Care, it is an honor to participate in today's hearing which will focus on the VA's Decentralized Hospital Computer Program and the pilot Integrated Hospital System Programs.

Due to time constraints, I will present a short oral statement and ask that my entire written statement be made a part of the hearing record.

My name is Bill Corum. I am a vice president with the McDonnell Douglas Corporation. I have been with McDonnell Douglas for 30 years. Managing large scale health care automation efforts is not new to me. Our company currently provides hospital information systems to 1 out of 4 of America's hospitals, ranging in size from 14 beds to 2,100 beds.

Our health systems staff is made up of 2,200 health care and data processing professionals with significant hands-on experience. Our software development takes place in an environment where data processing professionals design systems around the requirements of health care professionals.

In addition, regional client user's groups regularly meet to help us with this process. As an industry leader in health information systems, we have used this approach for the last 17 years.

The Congress directed the VA to demonstrate and evaluate off-the-shelf commercial systems to find the system that would most cost effectively best meet the automation needs of the VA's vast network of medical centers.

To the average person all computerized transactions look the same. This is why it is so important to understand exactly what each system can and cannot do and at what cost. The most important feature of the McDonnell Douglas Patient Care System installed at the VA Medical Center in Saginaw is that it is an integrated system which provides unquestioned benefits for both veteran patient and provider.

Integration is what differentiates our system from DHCP. In our system all patient and medical information is stored in one data base from which new care orders can be entered and retrieved. In our system when a doctor orders a lab test, the information appears immediately in the patient's record which is seen by all departments with security access.

In this way the pharmacy can adjust medicine if necessary, the dietetics department can hold or adjust the meal and after the tests are completed, the results are immediately shown on the chart which the doctor can retrieve from any station.

If our system were installed nationwide, basic patient information could be transmitted from one VA medical center to another. If a veteran visiting in another city is brought to a VA medical center with chest pains, it can be quickly determined by our hospital computer system if that veteran has been undergoing treatment for coronary or any other problems at his local VA medical center.

McDonnell Douglas uses Tandem hardware which, as its name implies, has a backup feature similar in principle to a tandem bicycle. If part of the computer fails, the "tandem" part takes over resulting in a 99-plus percent reliability. This feature is important in life and death situations and in daily situations where hundreds of out-patients need to be seen quickly and efficiently. When the hospital adds more software, those computers do not need to be replaced. Their capacity expands by adding additional circuit boards to the existing computer.

The McDonnell Douglas Patient Care System is a proven state-of-the-art fully-integrated system. When the VA released a request for proposal in 1984 to establish a test of three commercial hospital information systems, McDonnell Douglas submitted a bid.

The result of that bid provided our company the opportunity to install and operate our system at the Saginaw VA Medical Center. We did this to compete in a process that we believed would determine the future of hospital automation for the VA.

We believed then and still do today that the Congress designed this scenario in order to fairly evaluate all available options, including DHCP, using a uniform evaluation in order to ensure that veterans, VA health care providers, hospital administrators and taxpayers would be well served.

I have attached to my testimony a portion of the VA's most recent published plan for data processing entitled, "Information Systems Strategic Plan, Fiscal Years 1987 through 1992" which is dated January 1987. I have included pages 22 through 25 of the DM&S section as part of my prepared statement because it clearly states the VA's official views on the integrated hospital system.

I would bring one sentence to your attention. The sentence on page 23 states, "A formal evaluation of the IHS system is scheduled to be completed by Arthur Andersen and Company by September 30, 1987." This VA statement confirmed our own understanding of the evaluation schedule.

You can imagine our surprise when on February 9, 1987, the VA announced that it planned a phase-out of the IHS's and intended to pursue a full implementation of DHCP. This announcement was made 19 days prior to our completion of all contract deliverables.

We kept our commitment to the VA. Our contracted date for full installation at Saginaw was February 28, 1987 and we met that target.

We believe that the McDonnell Douglas Patient Care System is the industry leader. We improved our off-the-shelf product throughout our contract period at Saginaw because of the very rigorous and comprehensive requirements placed upon us by the VA.

Throughout the process we have had an excellent relationship with the Saginaw staff and have, with their help and advice, taken advantage of their experience to tailor our product to meet VA-specific needs.

Within the specified contract period, we have fully installed in both an in-patient and an out-patient environment a full function, fully integrated patient care system. We are proud of the results.

Mr. Chairman, in your invitation to this hearing, you asked us to address the facts supporting our innovative approach which we referenced in our letter to you of February 18, 1987. The concept and estimated costs came about in this manner.

While participating last year in the Booz-Allen and Hamilton DHCP/IHS comparison study commissioned by the VA, we were asked to do two things. First, we were required to submit data intended to revalidate our original 1984 bid. Second, they asked us to consider what we term an innovative approach to meeting the VA's needs using experience gained at Saginaw, standard commercial practices, networking capabilities and any other suggestions we deemed appropriate.

Both approaches they said would have to be well-documented and based on an 8-year life-cycle. We met with Booz-Allen and Hamilton on two separate occasions, presented them our two approaches with supporting documentation and discussed our innovative approach in-depth.

To ensure the VA would have the opportunity to consider this approach, we presented it with supporting documentation to the Agency on January 28, 1987. We expected to follow-up this meeting with the VA in the months ahead.

We believe that the core of any hospital system is its integration so we had already been looking at how we could use DHCP in a VA-wide alternative system and still retain our integration capability while protecting as much of the VA DHCP investment as possible.

Our IHS system at Saginaw employs a laboratory module that is integrated and operates on DEC PDP 11/44 hardware. The DHCP lab module, while not integrated, also operates on this same DEC equipment.

We determined that by using the DHCP lab system, we could protect the VA's investment for approximately 200 DEC computers and substantial software development. In doing so, our price would go down significantly.

We believe that some other DHCP modules could use most of the remaining VA DEC equipment where practical as small standalone systems.

We also determined that the total system costs could be further reduced if the VA would use remote site processing from some of its VA Medical Centers to others. In our model, we divided the 172 VA Medical Centers into eight sizing categories based on the VA-provided workload data used for our 1984 bid.

We took the two smallest categories which equated to 46 medical centers and assumed for estimating purposes that they could be networked to larger medical centers for processing power. This reduced the overall system hardware and staffing requirement without adversely effecting user-friendliness. Again, the cost decreased.

We did not estimate a price for either site preparation or facility management. We based this decision on the assumption that the 169 DHCP medical centers have already undergone site preparation to one degree or another and without visiting each of these sites, we cannot determine specific cost or even need.

We also omitted any pricing for facility management. Although we have dedicated employees at Saginaw, this is not a typical commercial approach nor is it the way we understand the VA currently supports DHCP. We did include in our price though the training of VA personnel and user documentation.

Our Saginaw system could be installed VA-wide using the DHCP lab and some remote processing for approximately $590 million dollars in 54 months. There are, of course, some qualifiers to this estimate.

I have outlined the key ones already, namely site preparation, facility management, integrating the DHCP lab and some remote processing. A finalized estimate would require specific in-depth knowledge of what would be acceptable to the VA under such an approach. We also based our estimate on service level standards routinely employed and accepted as cost-effective by the private sector.

Mr. Chairman, you suggested in your letter that McDonnell Douglas submit an additional formal proposal to the VA. As I noted, we have provided both Booz-Allen and the VA with a detailed outline of our innovative approach. We are willing to work with the VA and submit our innovative approach as an unsolicited proposal which would contain the supporting detail of our recent estimates.

For the past 30 months, McDonnell Douglas has committed its resources to installing our patient care system at Saginaw.

The purpose of this effort was to allow our system to be critically evaluated and compared to DHCP and the other commercial IHS sites. We encourage this evaluation and we believe this evaluation should be accomplished as soon as possible so that the VA can get on with the business of hospital automation.

If the Office of Technology Assessment, which we understand has been asked to look at this, recommends further comparison with established evaluation criteria, we believe that would be a more appropriate time to present our innovative approach as a basis for further evaluation.

We are fully prepared to support a procurement decision under these circumstances whatever the outcome. I cannot emphasize too strongly that our Corporation shares your goal of providing the very best health care for the Nation's veterans.

Mr. Chairman, thank you for this opportunity and I am pleased to respond to any questions.

[The prepared statement of Mr. Corum appears at p. 200.]

Dr. ROWLAND OF GEORGIA. Thank you very much for that statement, Mr. Corum. Mr. Bilirakis.

Mr. BILIRAKIS. Thank you, Mr. Chairman.

Mr. Corum, were you ever under the impression that by being asked to conduct the test study, that you might actually get the contract for the computers for the system.

Mr. CORUM. We thought that was a possibility, yes.

Mr. BILIRAKIS. A possibility. It's always a possibility, I guess.

Mr. CORUM. That's right.

Mr. BILIRAKIS. And it was not——

Mr. CORUM. It was not precluded from being a possibility.

Mr. BILIRAKIS. McDonnell Douglas, of course, has been paid for the test studies.

Mr. CORUM. That's true.

Mr. BILIRAKIS. Under a contract type of a thing.

You know, my concern here is that you all also—you know, we're talking about maybe an unfairness here, and I'm concerned about an unfairness as far as McDonnell Douglas is concerned, too. As I said, I think we all should be openminded, and if we, Congress, somebody, mandated a study, then, by gosh, it ought to be looked at from an openminded standpoint.

So there's a sense of fairness, I think, that should be in any ultimate decision-making.

I mentioned this earlier. We hear claims of user dissatisfaction in VA, and yet honestly we can't find anyone who seems to be dissatisfied, and we have a long list of witnesses yet to hear from, and I'm hopeful that they will be honest with us.

But do you have names of people, VA officials, who are dissatisfied with DHCP?

Mr. CORUM. No, I do not.

Mr. BILIRAKIS. You do not. So you don't know that they're necessarily dissatisfied. What you're saying basically is that it may be a good system, but that your system is better; is that what it comes down to?

Mr. CORUM. Yes, sir.

Mr. BILIRAKIS. Do you dispute Chairman Montgomery's statement that a change to the IHS system would cost the taxpayers an additional—what did he say—approximately $1.5 billion?

Mr. CORUM. No, I do not.

Mr. BILIRAKIS. You don't dispute it?

Mr. CORUM. I do not agree with that.

Mr. BILIRAKIS. Oh, you don't agree with it. You do dispute it, then.

Mr. CORUM. I disagree with that; yes, sir.

Mr. BILIRAKIS. Well, would you care to expand upon that answer in any way?

Mr. CORUM. I guess we understand the trauma of a transition. We deal with that in the commercial community on a daily basis.

I've heard several comments today in terms of the trauma associated with scrapping this system. We clearly have not suggested that; in fact, quite the contrary. We think there are some things that are of value in the VA system that should be preserved and used.

What we have tried to suggest is a transition that would involve the integration of the best of DHCP and the best of the commercial environment. We have taken a lot of energy to try to focus on trying to preserve VA sunk cost in our current thinking. I think there is more that could be done even than we've already proposed.

The difficulty is sitting down and trying to define a common ground upon which those two things can come together and provide an even better system for the VA and for the veteran.

Mr. BILIRAKIS. Is there significant capability, do you feel, in your system in terms of performing the job that is necessary for America's veterans, that exists in your system as against the current—the inhouse system?

Mr. CORUM. Yes, we do.

Mr. BILIRAKIS. You feel that there is.

Now let's talk about dollars, sir. Did you have a dollar figure that would be contra to Chairman Montgomery's $1.5 billion figure?

Mr. Corum. Yes, we do.

Mr. Bilirakis. You do. What is that?

Mr. Corum. We were—as I mentioned before—asked to provide several sets of numbers to Booz-Allen. We gave them two numbers. One number was to validate the 1984 bid, and that number came out about $1.5 billion, based upon the ground rules that had been established for that procurement, including all the strictures and requirements of that procurement.

In our innovative approach in the same timeframe, we came up with a cost of $929 million, using the basis of the innovative approach. We further refined that number and came up with a number that was, in fact, something less that $590 million, but to provide contingency and to be sure that we weren't missing any cost, we came up with an estimate of $590 million that would do the same job, but in 54 months, and that included providing 6 months for ramp-up of resources to provide that support and installation.

Those are the numbers that have been reviewed with both the VA and the——

Dr. Rowland of Georgia. May I clarify that?

Mr. Corum. Yes.

Dr. Rowland of Georgia. I want to clarify that in my own mind, if the gentleman will yield.

Is that a difference between the DHCP and the IHS system; that is, an additional amount, $590 million, or is that the total cost of what——

Mr. Corum. That would be the total cost from today forward to implement the system; yes, sir.

Dr. Rowland of Georgia. Is that for a year? That's 54 months, right?

Mr. Corum. I'm sorry?

Dr. Rowland of Georgia. How long is that?

Mr. Corum. Which number, sir? I'm sorry. The $590 million?

Dr. Rowland of Georgia. Yes, sir.

Mr. Corum. That was predicated on an installation process that would take 54 months, including a 6-month ramp-up.

Dr. Rowland of Georgia. If the gentleman would yield?

Mr. Bilirakis. By all means, go ahead.

Mr. McDonell. Just to clarify that point, Mr. Corum, the figure of $590 million was for 54 months, as I recall, or approximately 5 years.

The other number that you were given of $1.4 billion was a life-cycle cost, I believe, of 10 years; is that correct?

Mr. Corum. That is true, as was the $929 million.

Mr. McDonell. Please try to clarify the situation, what would this $590 million escalate to, if it was a 10-year life-cycle cost, so you could compare apples and apples?

Mr. Corum. Approximately $1 billion.

Mr. McDonell. $1 what?

Mr. Corum. $1 billion.

Mr. McDonell. $1 billion versus your $1.4 on the other system.

Mr. CORUM. Right.

Mr. McDONELL. What would an 18-year program cost be for that system?

Mr. CORUM. I'm sorry. I don't have that number.

Mr. McDONELL. Can you provide that for the record?

Mr. CORUM. I can provide that number for the record; yes, sir.

Mr. McDONELL. Thank you.

Mr. CORUM. Can I ask you, upon which assumptions you would like to have that number based?

Mr. McDONELL. Based on the same assumptions that you did for your $590 million.

Mr. CORUM. All right.

[The information referred to appears at p. 209.]

Mr. BILIRAKIS. Is this new money that we're talking about?

Mr. CORUM. Yes, sir.

Mr. BILIRAKIS. Is this money in addition to—for instance, what would it cost the VA to function under the present system over the same period of time, the current system?

Dr. ROWLAND OF GEORGIA. Well, we have—if the gentleman will yield?

Mr. BILIRAKIS. Yes. Go ahead, sir.

Dr. ROWLAND OF GEORGIA. We have some figures here, and we're talking about a 10-year cycle, which were supplied to us by the VA, and I understand the source was Booz-Allen, that 10 years would be $777 million, the cost would be, under the DHCP, but under the IHS cost for 10 years would be almost $1.5 billion.

Do you accept those figures?

Mr. CORUM. I believe those are the numbers that are represented by Booz-Allen, but it is also apparent that there are two different cost bases for the two different numbers, as represented in their cost exhibit.

Mr. McDONELL. Could you explain what you consider the differences to be, please?

Mr. CORUM. It's hard to characterize because the report is somewhat confusing in this regard. There are two separate exhibits for the basis for cost for the two alternatives, instead of one, as we had been led to believe there might be.

In the DHCP cost estimate baseline, there is virtually no definition of the level of support provided for installation, operation, or support, quite contrary to the information in the IHS cost estimate, which identifies specific FTEs, 24-hour, 7-day-a-week coverage, and it would appear that the DHCP number does not provide the same level of support. So it's difficult to compare them, as the Booz-Allen report even states.

Mr. McDONELL. I think what we're trying to determine here is whether or not you agree with the numbers that Booz-Allen has provided, and specifically with your system, which is a 10-year cost of $1.4 billion. And as I understood it, that Booz-Allen information was provided after they had consulted with you as to what the costs were.

Mr. CORUM. Yes. If you recall Mr. Block's testimony, he mentioned that the cost used for IHS was based upon contracted cost elements. We perceive that there is a different basis in cost between those two numbers.

Mr. McDONELL. Between your number and his number?

Mr. CORUM. Yes, sir. I mean, we do not know—I'm still not sure I understand his explanation as to why he did not decide to include our innovative approach number, which was $929 million for the same period. It's a difference of $500 million. That would seem to have some significance.

Mr. McDONELL. Well, what I'm trying to focus on is your cost of $1 billion that you indicated, not for the innovative approach, but for what the contract calls for.

Mr. CORUM. If you recall, the basis of the costs that were used in the—we were asked to provide an 8-year life-cycle cost, which is the $929 million. A 10-year life-cycle cost brings it to slightly over $1 billion, $1,048 million.

Mr. McDONELL. Thank you.

Mr. BILIRAKIS. All right, now again trying to make sure we compare apples with apples here, you come to that figure by extrapolation of the $590 million in 54 months, and you bring it out—spread it out over 10 years to a little over $1 billion.

Mr. CORUM. We have detailed cost information by site, by month.

Mr. BILIRAKIS. Okay. Maybe I used the wrong term when I used "extrapolation." But in any case, going back to your testimony at the top of page 4, you say, referring to the $590 million in 54 months, "There are, of course, some qualifiers to this estimate."

Mr. CORUM. Yes, sir.

Mr. BILIRAKIS. And then you go on, "I have outlined the key ones above, namely site preparation, facility management, integrating the DHCP lab and some remote processing."

Well, those qualifiers would also apply to the $1-point-plus billion over 10 years, would they not?

Mr. CORUM. Yes, sir.

Mr. BILIRAKIS. So we're not really comparing $1-point-plus billion with $777 million. It could be God only knows what. Is that a true statement?

Mr. CORUM. I'm sorry. I'm not sure I understood the question, sir.

Mr. BILIRAKIS. Well, I say we're not really comparing $1-point——

Mr. CORUM. In comparing DHCP versus IHS, I agree.

Mr. BILIRAKIS. Because of the qualifiers.

Mr. CORUM. Well, the qualifiers do apply to the $1 billion number, if I understand your question correctly.

Mr. BILIRAKIS. Yes, sure. They apply to the $590 million, and they also apply to the $1-plus billion.

Mr. CORUM. Yes, sir. After the 10-year cost; yes, sir.

Mr. BILIRAKIS. So there's no likelihood of a firm fixed-price type of a contract?

Mr. CORUM. Absolutely not. Those numbers are based upon a firm fixed-price approach.

Mr. BILIRAKIS. What numbers are?

Mr. CORUM. The $590 and the $1.4 billion.

Mr. BILIRAKIS. Well, all right. But how about the qualifiers? Don't they——

Mr. **Corum**. Those have been included in the considerations of our innovative approach and in the prices related to that innovative approach.

In other words, without having a statement of requirements from the VA, we had to make some assumptions. Those are the qualifiers. So we have based that price on these qualifiers. Those qualifiers are——

Mr. **Bilirakis**. Well, sir, they're not qualifiers from the standpoint of——

Mr. **Corum**. They're not qualifiers in the normal sense. This is a statement of—you know, an interpretation of requirements where we have said, "This is upon which this price is based," and we intend that to be a firm fixed price.

Mr. **Bilirakis**. So what you're saying is, you would actually enter into a firm fixed-price contract for $1-plus billion, or whatever it is?

Mr. **Corum**. Or the $590 million, whichever is appropriate.

One of the reasons why we're concerned about the billion dollar number is, a lot of things happen after an installation process, and there are a lot of options open to the VA. There are some things they may want to do on their own instead of continue contracting. That's why we thought it was inappropriate to characterize the total— a total 10-year period, because so many things are subject to change, and there are things in a joint venture of this type that the VA might want to undertake on their own, which could have a dramatic impact upon the cost.

Mr. **Bilirakis**. I think I now understand.

Well, how about the software? Would the VA have the proprietary rights to the software if they entered into the contract with McDonnell-Douglas?

Mr. **Corum**. We would be glad to negotiate data rights.

Mr. **Bilirakis**. Negotiate the rights?

Mr. **Corum**. I mean, there is some concern about this. This is basically our commercial product. We could not afford to have this become public domain obviously, but we would be glad to negotiate data rights with the VA.

Mr. **Bilirakis**. Thank you, sir. I know my time is long up.

Thank you, Mr. Chairman.

Dr. **Rowland of Georgia**. Thank you, Mr. Bilirakis.

Let me just ask one question right here that may help to give us information that we've requested.

You had a letter of invitation from the committee to testify here, and you were to provide certain data and documentation concerning your company's participation in this evaluation, and that hasn't been received yet, to my knowledge.

Are you prepared to provide that information today? And I guess this is what we're talking about right here, the difference in these figures. Are you prepared to provide that today?

Mr. **Corum**. I did not bring that information with me today. We have a concern, because it contains proprietary information. We would be glad to review this information in closed session under the protection of Congress, so that this information doesn't become publically available. It is the basis of our commercial venture.

Dr. **Rowland of Georgia**. So that's the reason that you haven't provided it up to this point?

Mr. CORUM. Yes, sir.

Dr. ROWLAND OF GEORGIA. But you would provide it under certain conditions.

Mr. CORUM. Yes, sir. And I guess we're interested in the fact that we have made it known that the information has been provided to Booz-Allen and the VA, but no one has asked them for that information.

Mr. McDONELL. Is all of it proprietary, or is just a certain portion of it?

Mr. CORUM. It's hard to separate it out, Mr. McDonell. I mean, the basic approach is predicated upon our system architecture and some of the things that we do in the commercial marketplace, which we consider proprietary.

I mean, the information is available for review. We just don't feel that the public forum is the place to do that.

Mr. McDONELL. And you have provided that information to Booz-Allen?

Mr. CORUM. Yes, sir, we have provided that information to Booz-Allen.

Mr. FLEMING. Would you have any objection if Booz-Allen-Hamilton provided that information to the committee. In other words, you have more——

Mr. CORUM. It was provided to them for their use for their study for the VA, so I would assume that it would be available to you.

Mr. FLEMING. So if the information we asked for in the letter of invitation is available to VA or Booz-Allen, we have your permission for them to release that information to the committee?

Mr. CORUM. Yes, sir, you do.

Dr. ROWLAND OF GEORGIA. Changing to a little different line of questioning, Mr. Corum, how many staff would you require, if McDonnell-Douglas were to deploy their system in all 172 VA medical centers?

Mr. CORUM. It depends upon the rate at which the VA wants to supply it. Again, that information is available, but it is—this is an area where there is proprietary information, and I would prefer to divulge that in a closed session.

Dr. ROWLAND OF GEORGIA. I don't know why that would be proprietary. Would you supply that?

Mr. CORUM. I do not have the information with me. I'll be glad to provide it for the record.

Dr. ROWLAND OF GEORGIA. Would you supply it for the record, then?

Mr. CORUM. I will provide that information for the record; yes, sir.

Dr. ROWLAND OF GEORGIA. Okay, thank you.

[The information referred to appears at p. 212.]

Dr. ROWLAND OF GEORGIA. Would you anticipate any recruiting problems for that number of computer personnel, whatever that happened to be?

Mr. CORUM. I would not consider it any unusual recruiting problems. This is a process that goes on all the time. To say there would be no problems would be somewhat of an overstatement, but this is well within the capability of McDonnell-Douglas to deal with.

Dr. ROWLAND OF GEORGIA. In your testimony, I believe you made the statement that integration is the core of any system.

But I understand that there may be a wide variety of normally incompatible equipment. We hear that, for example, data collected for the nursing system is not integrated with the rest of the system; is that true?

Mr. CORUM. That is not true of our system.

Dr. ROWLAND OF GEORGIA. That is not true. You do not have a wide variety of normally incompatible equipment, then.

Mr. CORUM. That's not true either. We do interface with a wide variety of equipment, as it relates particularly to lab equipment.

Dr. ROWLAND OF GEORGIA. Counsel?

Mr. MCDONELL. Well, let's review what I've been told what your system hardware consists of. The lab module is on a DEC-11/44. Your case mix management component of the resource allocation model is on IBM, and the rest of your modules are on your Tandem hardware.

And we understand that the lab software requires the Saginaw lab staff to perform duplicate data entries in order to enter the data into both the Tandem and a DEC system, that the nursing and materials management applications run on networked PCs, and the financial supporting software is housed in your St. Louis data center.

Now is that an integrated system?

Mr. CORUM. Yes, sir, it is.

Mr. MCDONELL. Explain it, please.

Mr. CORUM. Again, the nature of an integrated system is the central database of patient information. The fact that we tie other systems in to facilitate and support that operation is also a part of that integration.

It is true that there are two sets of control files for the lab system, but that is not true in terms of daily transaction activities as they take care of gathering samples and performing tests and reporting results. That's done only once.

But that's the nature of the system. It allows us to take a diverse number of different types of hardware and integrate them into a composite system that allows data entered once for daily operations to perform as an integrated system.

Dr. ROWLAND OF GEORGIA. Mr. Corum, is it true that the Saginaw site is the first and the only site where McDonnell-Douglas has provided an onsite facilities management?

Mr. CORUM. That is true.

Dr. ROWLAND OF GEORGIA. Mr. Bilirakis?

Mr. BILIRAKIS. Well, Mr. Chairman, thank you for giving me another opportunity.

Again, I'm concerned about this comparing apples with apples thing. The $777 million for the life cycle of 10 years, which is estimated as DHPC cost estimates by the consultant, do you agree with that figure?

Mr. CORUM. It's hard for me to agree or disagree with it, since there is very little detail that supports it. It appears, based upon the way the cost elements were described in the Booz-Allen report, that the basis of those costs is different than the basis of cost used for the IHS cost.

It would appear that some of the costs do not fully reflect what we would perceive to be a fullfledged implementation and support operation. But it's difficult for me to comment on in any detail.

Dr. ROWLAND OF GEORGIA. Does the Veterans' Administration have personnel who could adequately handle your system?

Mr. CORUM. I would say so. We have visited their sites. We are impressed with their people and with what they've been able to do. I would say——

Mr. BILIRAKIS. Okay. Do your costs include the training of the Veterans' personnel and whatnot?

Mr. CORUM. Yes, it does.

Mr. BILIRAKIS. Does that include the maintenance? Does that include troubleshooting, answering inquiries that may arise?

Mr. CORUM. Yes, it does.

Mr. BILIRAKIS. I bought a computer a few months ago for my campaign down in Florida, and we haven't been able to function yet, because parts are not available. They're not available unless you pay X amount of thousands of dollars or something of that nature.

Well, I note that you asked, Mr. Chairman, for detailed figures, so we can really get to the point of comparing apples with apples as to these various systems, for instance, the language that would be used by one system versus that in the current system.

All right. Thank you, Mr. Chairman.

Dr. ROWLAND OF GEORGIA. Mr. Block has agreed to come back to the table and sit with Mr. Corum and see if we can find out just what the difference is in these figures. So I'd like to ask Mr. Block if he will come back up to the table, and let's see if we can get this clarified.

Suppose we ask Mr. Block to make a statement, and then we will give Mr. Corum time to respond and see if we can resolve this disparity that we apparently have here.

Mr. Block?

Mr. BLOCK. Mr. Chairman, I believe the difference between the estimates deals with what's contained in the numbers. The DHPC number for $777 million is a complete cost estimate, as is the $1.4 billion. We have not had the opportunity to see all the details on the $590 million estimate, but if you take the $1.4 billion, that represents a 10-year life cycle, at a state that represents a 10-year life cycle. It does not include VA management costs, which are included in the VA cost estimate. It does include centralized processing, which is part of the innovative concepts that McDonnell-Douglas has.

We did not—but you need to recognize that the DHCP, if it went to a centralized processing concept, would also have a subsequent—could also have a subsequent reduction in cost. So in our comparability study, to keep them the same, because we realized that there would be a decrease in cost, a relative decrease in cost for both systems if they went to centralized processing, to the 1040, you need to add certain things, which would bring it up to the number of the $1.4 billion. Site preparation, facility management for 10 years, and the VA management cost itself for that 10 years are all things that need to be added to that 1040 to have comparability.

Mr. CORUM. I guess I'm—you mentioned facility management. It is not clear or even indicated that the DHCP number is based upon facility management, nor would it appear, if that is—for some reason, the IHS exhibit continually identifies the need for 24-hour coverage, and that is not specified nor does it appear that it is even considered in the DHCP alternative.

Mr. BLOCK. The essence, if you review the study, you find that we found the IHS to be more effective in certain areas, particularly in support services. One of the reasons that IHS was found to be more effective in support services was because of the IHS approach to provide 24-hour coverage on the system.

It is more costly; hence it's more effective. That's why IHS was found to be more effective. The cost and the effectiveness go together.

Dr. ROWLAND OF GEORGIA. DHCP is not 24 hours?

Mr. BLOCK. It is not 24-hour coverage for computer operations.

Mr. SWEDBERG. The VA has made a decision back a couple years ago to develop a system that does not require attended operations for 24 hours, so the approach that we used reflected that decision.

Dr. ROWLAND OF GEORGIA. Mr. Corum, why would you give a figure for 24 hours if the VA didn't want that or need it?

Mr. CORUM. I'm sorry, sir. The VA told us to provide that number. We would not—this is the only installation where 24-hour coverage is provided. It is not used or required in any of our commercial installations, and we question its need in the VA. But we are stuck with that cost, because that was the spec that we were given to respond to.

Dr. ROWLAND OF GEORGIA. Mr. Bilirakis, do you have a question at this point?

Mr. BILIRAKIS. No.

Dr. ROWLAND OF GEORGIA. Well, you only touched on the facilities management. What about—would you address some of the other differences that Mr. Block mentioned.

Mr. CORUM. I'm trying to recall. Oh, the site prep?

Again, I think site prep is a push in either direction. For the kind of equipment we're using, many of the installations don't even require computer rooms, so it's, I mean, as characterized in the Booz-Allen report, they indicated that most of the site preparation has already been accomplished and so is not a factor. Even if it was, much of the equipment that we use for this kind of system doesn't require the normal machine room environment, so it can operate in an office environment. So we don't feel that site preparation is a plus or minus on either side.

Dr. ROWLAND OF GEORGIA. Let me go back to facilities management just a moment.

If you don't have available at this point the site coverage hours that DHCP, is possibly operating under relative to cost, could you supply us with that information?

Mr. CORUM. I'm sorry.

What was the question again, Mr. Chairman; I didn't hear the question?

Dr. ROWLAND OF GEORGIA. Since there's a difference in the number of hours, DHCP is based on a certain number of site coverage hours, and you are 24 hours, 7 days a week.

Mr. CORUM. Yes, sir. We have specific numbers that identify what's included in our report. We could also include what we thought might be more appropriate, if that's your question.

Dr. ROWLAND OF GEORGIA. Do you have those figures with you?

Mr. CORUM. No, sir, I'm sorry, I don't. But I will provide them for the record.

Dr. ROWLAND OF GEORGIA. You will supply them for us?

Mr. CORUM. Yes, sir.

[The information referred to appears at p. 213.]

Dr. ROWLAND OF GEORGIA. Okay. What about other points that Mr. Block mentioned?

Mr. Block?

Mr. BLOCK. VA management costs.

Mr. CORUM. I agree. I thought that had been accounted for, and I thought you identified management support in terms of $13 million for DHCP and $14 million for IHS, and I had assumed that you had accounted for that under both of those circumstances.

Mr. SWEDBERG. That is included in our estimate. I think the question was whether that's included in the $1.4 billion. That was an adjustment that we made to data that we received from the vendors in coming up with the IHS cost estimate.

Mr. CORUM. It was not included in our $1.4 billion, but we don't think our $1.4 number is the number that should be used anyway. But from the Booz-Allen report, it appears that it is included in their $1.4 billion number, and we think that's appropriate. It would also apply to a $1 billion number or a $590 million number. But it's a relatively small number compared with the total.

Dr. ROWLAND OF GEORGIA. Mr. Block, do you think that, based on some differences that have been pointed out here, there is going to be a significant difference in the amount of cost comparing DHCP with IHS?

Mr. BLOCK. Mr. Chairman, I would have to take a long look at the 1040, that 10-year life cycle cost to understand exactly what is included and what is not included to be able to say that fairly.

Dr. ROWLAND OF GEORGIA. We are still talking about, even if everything was exactly the same, over $200 million difference, I believe, $1,040,000? Was that the figure?

Mr. CORUM. Yes, sir, that is the number that we have used under the circumstance; but as I tried to point out in my testimony, the number could be something different than that, and we think it could be considerably less based upon a clear definition of what the requirements are that we could focus all the competitive basis of our commercial enterprise on.

There is room for movement down as well as up, and that is clearly dependent on how much does the VA want.

Dr. ROWLAND OF GEORGIA. It could go either direction, then.

Mr. CORUM. Yes, sir.

Dr. ROWLAND OF GEORGIA. Mr. Bilirakis.

Mr. BILIRAKIS. Well, I guess we can just go on and on and on here. We have a long list of witnesses, though. I have a 10-bill markup in Energy and Commerce, and they are calling me here and need my votes and whatnot.

Mr. Block, under the Federal Information Processing Standards that now exist, would the IHS system be compatible with that? I am talking about functioning now. Are you familiar with the FIPS?

Mr. BLOCK. Yes, sir.

Mr. BILIRAKIS. How would IHS square with that in terms of functioning? We are comparing apples with apples here. I think we have got to be talking that as well as language.

Go ahead, sir.

Mr. BLOCK. I think we would really have to evaluate that. I would rather not say at this point how we do believe it would be——

Mr. BILIRAKIS. I see.

Would you have any comments on that, Mr. Corum?

Mr. CORUM. I would just quote their own report, which identifies IHS as being current state of the art as far as software, in most cases using COBOL, which is in FIPS standards, and that IHS is better suited for addressing all the interfaces usually associated with communicating with external systems because it uses current standard software for that purpose.

Dr. ROWLAND OF GEORGIA. Mr. Swedberg, do you have something you want to say?

Mr. SWEDBERG. I was just going to say that the report also states that the MUMPS language that is used for the DHCP is an ANSI standard and it is also a FIPS standard as of, I believe it was, November 1986. So that system has the same types of credentials.

Mr. CORUM. That is true.

Mr. BLOCK. That is correct.

Mr. BILIRAKIS. The IHS system uses a different language, though, right?

Mr. BLOCK. That is correct.

Mr. BILIRAKIS. Would there be any problem as far as the functioning of their computer with the different language? Have you taken that into consideration in your cost estimates, et cetera?

Mr. CORUM. If I may respond, our system also supports MUMPS.

Mr. BILIRAKIS. Oh, it does?

Mr. CORUM. We just do not use it as a primary language because of the better control and efficiency you get out of processing large transactions with COBOL.

Mr. BILIRAKIS. On the 24-hour business—actually, I guess maybe that was covered—would we have better quality if we functioned for 24 hours as against the less than 24 hours?

Mr. BLOCK. The issue is really attended operations. It is an issue that the VA, I believe, is examining at this very moment. It is an issue that is more appropriate at the largest VAMCs as opposed to the smaller sites.

Mr. BILIRAKIS. But you are going to be furnishing us figures so that your dollar figures, then, would be for the same amount of hours that the VA now functions?

Mr. CORUM. If I know what those hours are, I will be glad to respond with a corresponding——

Mr. BILIRAKIS. I think that is what was asked for by the Chair, wasn't it, earlier?

Mr. CORUM. Yes. We can give you our best guess. I do not know exactly how the VA staffs all of their centers, and if we know what that number is, we could give you a number that would reflect that.

Mr. **Bilirakis**. Thank you very much.

Dr. **Rowland of Georgia**. If you have some additional questions you may submit them for the record if you have to leave.

Mr. **Bilirakis**. By all means.

Dr. **Rowland of Georgia**. Mr. Fleming.

Mr. **Fleming**. Mr. Chairman, I would like to ask a question for the chairman of the full committee.

Mr. Corum, we have a copy of your letter of February 10, 1986 to Michael Bayes of the VA Medical Center at Long Beach, California which you wrote following your visit to inspect the DHCP system there. I would like to quote from that letter. You stated:

"I was extremely impressed with the caliber and enthusiasm of the people involved, both on your staff and the users. Everyone was pleased with how the system was working and the teamwork that made it happen. The ability of the system to respond to the users' needs was frequently mentioned. I was also impressed with what you have done with the system configuration. Pushing that much work through the PDP 11/44s with that kind of response time is quite an achievement and you should be commended for the fine operation you have there at Long Beach."

Yet page 5 of the McDonnell Douglas presentation of October 1986 to Bob Kane of the House Appropriations Committee investigative staff said:

"The VA is lobbying to acquire replacement hardware at the larger VA medical centers as a means of increasing capacity and improving the output."

Then I read in your letter of February 27th to Chairman Boland of the HUD -Independent Agency Subcommittee, and I quote:

"Does it make sense for the VA to go with a DHCP expansion in 1987 when major questions regarding the system still remain?" You go on to say, "Until this matter is resolved, we would request that you seriously consider directing the VA to refrain from obligating these 1987 funds."

Of course, withholding funds already appropriated is what the chairman is very concerned about.

What changed your mind so drastically about the DHCP in 1 year?

Mr. **Corum**. Nothing, because my mind hasn't changed. If I may quote the remainder of my letter to Mr. Bayes:

"I am even more convinced now that there is a fit between your application approach and our system architecture, particularly with its flexible screen handling and modular growth capabilities."

There is no question that we are impressed with the VA, with their people and what they have done. They are working with an architecture which is, for lack of a better term, more primitive than is currently available with the latest state-of-the-art technology. We think there is a possibility to take the best of both of those and come up with a better solution than either one of them has right now.

That was the spirit of our thrust when I communicated with Mike Bayes, and that is our key concern here. There was supposed to be a competition to evaluate the full capability of current commercial capability. That is the only argument that we have with this issue, and that is that that has been or it appeared was being foreshortened and, in fact, aborted before it had had a full chance to demonstrate its capability.

Mr. FLEMING. Well, you made that argument to the chairman. You stated all you were looking for was a fair evaluation.

Mr. CORUM. Yes, sir.

Mr. FLEMING. Do you feel that the way to get that fair evaluation is to hold up the $35 million of money that has already been appropriated, which you asked Mr. Boland to do and which Mr. Boland agreed to do? I mean is that necessary for you to have a fair evaluation of your system?

Mr. CORUM. I don't know. Is it?

Mr. FLEMING. I am asking you. You asked Mr. Boland to hold the money up. I didn't ask him to hold it up.

Mr. CORUM. All we asked was for him to be sure that there was——

Mr. FLEMING. I am asking you, sir, is what has the fiscal year 1987 funds got to do with evaluating your system?

Mr. CORUM. It has to do with proceeding as if there was no competition going on whatsoever.

Mr. FLEMING. No, but the competition is going on. The IHS is up and running in three hospitals. As the chairman told you in his office, he doesn't care how long the evaluation continues. What I am asking you is why does McDonnell Douglas insist that the chairman of the HUD independent agencies subcommittee direct VA not to proceed with the 1987 appropriation? Those funds have nothing to do with a fair evaluation of your system unless you feel, sir, that McDonnell Douglas will go down the tube if VA is allowed to put up additional components in its DHCP system.

Mr. CORUM. Quite the contrary. The issue, as I explained in the chairman's office, is that on February 9th, what we considered a preemptive announcement was made that said to hell with the competition, we are going to go ahead on our own anyway, and that was what triggered our actions to try to get some hearing to be sure that there was going to be an effective evaluation of the commercial alternatives.

Mr. FLEMING. You know that the Appropriations Committee can direct VA to continue with the evaluation at those three sites, maybe others as well. But again, why is it necessary to withhold the $35 million of money the Appropriations Committee has already appropriated? What has that got to do with continuing the evaluation of your system?

It is just kind of odd that McDonnell Douglas would ask the Appropriations Committee to direct the VA not to proceed with its contract because of your concern that you are not getting a fair evaluation of your system. It seems like there is more to it. You apparently feel that if VA is allowed to proceed, the system will be up and running so well that maybe in the future there would be no chance of stopping it.

Is that a fair assumption?

Mr. CORUM. No, sir, it is not. I guess the question is is it going to take them another $35 million to complete DHCP to the point where we have spent $3 million to complete our installation?

Mr. **Fleming**. You are in one facility. The VA has got its system going in 169 hospitals. I am just trying to determine whay McDonnell Douglas felt it had to ask Mr. Boland to direct VA not to spend the money that the committee and the Congress had already appropriated.

Mr. **Corum**. Again, I can only say what I said before. It appeared that the VA was going to preempt the competition.

Mr. **Fleming**. All right. Let me ask you this. What if the committee made a decision to allow the VA to proceed with the understanding that you could continue to run your system in Saginaw? Would you then withdraw your request?

Mr. **Corum**. I am not even sure my request is germane. Am I the only one that had an influence on the House Appropriations Committee to do what they did?

Mr. **Fleming**. I am not even suggesting that your letter had anything to do with the appropriations committee's directing the VA not to proceed. I just say the timing, you would have to admit, is a little bit——

Mr. **Corum**. That was exactly our reaction when we heard the announcement.

Mr. **Fleming**. When McDonnell Douglas comes is with a request and the same language goes to VA 2 weeks later, the timing, you have to admit, is a little bit unusual.

Dr. **Rowland of Georgia**. If the gentleman would yield, I believe we heard earlier from Mr. Cox that many of the problems encountered in the DHCP system that were turned up by the investigation of the staff of the subcommittee had been addressed, and in fact, that system was improving and moving along quite well and coming up to speed.

Mr. Corum, you heard that testimony, I believe.

Mr. **Corum**. I did, yes, sir.

Dr. **Rowland of Georgia**. Do you agree that that is true, that it is coming along?

Mr. **Corum**. From all reports, it appears to be. I have no direct observation.

Dr. **Rowland of Georgia**. Very well.

Mr. Bilirakis has gone. We do have a vote on, and the committee will stand in recess. I am not sure that additional questions will be required of this panel, but would you please stay around in the event there are?

I want to thank you very much, Mr. Corum and Mr. Block, for coming back to the table.

We stand in recess.

[Recess.]

Dr. **Rowland of Georgia**. I again thank the previous panel we had, and I do not believe there will be any additional questions for them.

At this time I would like to ask Dr. Jon Straumfjord to come to the witness table.

Dr. Straumfjord, we certainly appreciate you being here. Mike Bilirakis apologizes. He says that you and he are good friends and that he would like to be here except that there is a markup going on in Energy and Commerce and it is necessary for him to be there. He wanted you to know that.

Thank you again for being here, and proceed in your own manner.

STATEMENT OF JON STRAUMFJORD, M.D., CHIEF OF LABORATORY SERVICES, VETERANS' ADMINISTRATION MEDICAL CENTER, TAMPA, FLORIDA

Dr. STRAUMFJORD. Thank you, sir.

I am a professor, and it is hard for a professor to say anything in less than 45 minutes, but in deference to time, I will read a statement.

My name is Dr. Jon Straumfjord. I am a professor of pathology at the University of South Florida, Chief of the Laboratory Service at James A. Haley Veterans' Administration Hospital, and the former Director of Laboratories at the Moffitt Cancer Hospital, and currently a member of the Executive Committee at the Moffitt Cancer Hospital.

During the past year I have had the opportunity to observe the installation of the McDonnell Douglas Hospital Information System at Moffitt Cancer Hospital and compare it to the Veterans' Administration DHCP computer system. I am a member of the Laboratory Special Users Group for DHCP, but I joined that group late in the game and I have no sense of authorship for the program.

I feel I am qualified to render an opinion regarding health care laboratory information systems since I am responsible for the development of two of them, the first one in 1964, which was one of the first systems in the Nation that actually worked.

In deference to the time, I will keep my comments brief, concentrating on five points about the McDonnell Douglas Integrated Hospital System at Moffitt Hospital in Tampa. These comments are from my own observations and recent extensive interviews with the Moffitt staff.

Only 60 to 70 percent of the committed features work after almost 1 year. The system is generally cumbersome and not user friendly, requiring more extensive training in its use. Some examples are as follows. Currently, to order an X-ray the individual most look up in a code book the code, the ICD-9 code for something like a chest plate, for example, type in the diagnosis and then any comments. The same system is to be used for materials management and dietetics.

The report generation is faulty. If data is requested for a period of time greater than 1 month, one gets duplicate data. The medical record librarian tells me their medical record tracking currently is useless.

Patient registration is cumbersome, difficult, and does not work for the clinic personnel. From a systems point of view the program works, but it is poorly designed for practical use.

Insurance billing is poor. This is something the VA doesn't have to worry about, but McDonnell Douglas will come down to fix the program and the problem recurs. Double billing occurred early upon implementation and still occurs.

Patients are identified by a unit number, and the unit number is crucial to the Integrated Data Base program of McDonnell Douglas. I must also add that to generate a bill, you must discharge the patient. Any error in the patient identification during re-registration will assign the patient a new unit number.

For example, if the patient's name is James L (with no period after the "L") Smith on admission, he is assigned a number. If the patient is discharged and readmitted under James L. (with a period after the "L") Smith, he gets a new unit number. This has created problems and potential harm to patients in the hospital. It has created problems in the identification of the patient in the blood bank and it is a matter of concern of the Ambulatory Care Committee and the Executive Committee of the hospital.

The Ambulatory Care Committee has also requested that the X-ray program not be used because of errors generated because of the data input.

Prior to 60 days ago, if an improper answer was given to a prompt, not only would a terminal lock up but the whole system would lock up and had to be reset by data processing personnel. This has now been fixed.

Few of the clinical programs are available: no lab package, no pharmacy package, no personnel package, no mailman package, no radiology package to date. Pharmacy was promised in 1986 but will not be ready until 1988. What is available is essentially a text editing system.

At the present time they are seeing response degradation with only 48 to 50 acute patients utilizing a mainframe computer. It is an IBM 4381 Group 1 that has the same power of the cluster of the five VAXs that the major hospitals in the VA would like to secure.

The system currently supports 56 printers and 121 terminals. The system is very expensive. Software is approximately $700,000, and the computer $1.2 million. The enhancements, which I think should be a part of the basic package, will cost as much as the original software.

The response of McDonnell Douglas to problems was, in the opinion of the chief administrator and his associates, far less than desirable. They indicated they had to threaten legal action before they could receive an adequate response. Neither of the administrators would recommend the system, and they would seek another, but they feel they are hooked.

The current data processing staff for a 167-bed hospital, which is the actual total size of Moffitt Hospital, but occupied at only 48 to 50 patients a day and less than 14,000 outpatient visits, totals 11. That is four professional program analysts, and the rest are operators and a secretary. At James A. Haley we also have 11, but I think we have to do some comparison of actual volume.

We have 450 beds average daily census. We see 162,000 outpatient visits and also are supporting Orlando, which is 85,000 visits, approximately, and Pasco, which is another 15,000.

The equipment for the Tampa VA cost $210,000 as opposed to $1.2 million, and even with the upgrade with the five VAXs that the VA is talking about, the cost will not exceed $800,000. The fact that the integrated system does not have a laboratory program is very important. Lab programs generally consume 25 to 50 percent of the total hospital computing capability. Availability of laboratory results from the computer is generally the single most positive feature of a hospital system in the eyes of the nurses and physicians.

Our government has received a good deal with the DHCP system. It needs improvement but it is a workable system. It is cost effective and suits the needs of the VA hospital for both in-patient and out-patient care. Thousands of employees have learned the system, and shift to another system would be costly in manpower and time.

To exchange a working system for one of questionable function would be a disaster. Hospitals are under the mandate to become more productive, and the data supplied by the DHCP system is absolutely essential to meet that goal. A new system, even if it works, will delay obtaining meaningful data for at least 3 years, and with the current RAM model, it means 5 years down the road.

But even more important is the impact of the system on the quality of patient care. The transition would adversely affect care as mistakes are made until the new system is learned. No single thing has a greater impact on a hospital than a computerized hospital information system, either for good or bad. A good system is like a symphony conductor, converting discord to beautiful and effective harmony.

A good system is positive on employee morale; a bad system is devastating to morale, particularly if they liked the previous system. At the present time, few of the staff at Moffitt like that system. At James A. Haley, the great majority like the DHCP system.

Thank you, gentlemen, for allowing me to speak.

[The prepared statement of Dr. Straumfjord appears at p. 214.]

Dr. **ROWLAND OF GEORGIA**. Dr. Straumfjord, thank you very much for your testimony. You have answered the questions I had in mind already, I think, but let me just go over a couple of things.

This commercial system was installed by who, the commercial system that we talked about?

Dr. **STRAUMFJORD**. McDonnell Douglas. It is the McDonnell Douglas Integrated Hospital Information System.

Dr. **ROWLAND OF GEORGIA**. But you indicated in your testimony that the DHCP system in Tampa was doing very well and that people liked it very much?

Dr. **STRAUMFJORD**. That is true, sir.

Dr. **ROWLAND OF GEORGIA**. But they did not like the system that McDonnell Douglas had.

Dr. **STRAUMFJORD**. That is correct. The Moffitt staff do not like it. The house staff prefer rotating through our hospital because of the availability, for example, of laboratory data.

Dr. **ROWLAND OF GEORGIA**. Is the system at the Moffitt Hospital the same as the one at Saginaw, do you know?

Dr. **STRAUMFJORD**. I cannot answer that, sir. It is my understanding that a portion of the system is to be a part of it. I am presenting this for two reasons. One is to indicate some of the support provided by McDonnell Douglas, and I must also in fairness say that that has improved, but also I think the Booz-Allen report touched on a very important consideration, and that is a system has to be user friendly to be effective in the hospital. A system designed by computer program analysts is not necessarily a system that will work in a hospital.

I think the success of DHCP relates to the fact that it is largely designed by experienced hospital folks.

Dr. ROWLAND OF GEORGIA. A system that is not a very good system certainly impacts rather significantly on the quality of care delivered in the hospital. I believe that you said that.

Dr. STRAUMFJORD. Yes, and I have hard data on that. As a former Chairman of the Department of Pathology at the Medical College of Wisconsin, I had graduate students that were looking at health care delivery research, and one did a thesis on the implementation of a laboratory information system, before and after. For example, the error rate in the laboratory, in the rapid response lab, was approximately 450 per 10,000 reports, and after the implementation of the data processing system had dropped down to 10. Anytime you go through a greater transcription process, you induce the possibility of error.

Dr. ROWLAND OF GEORGIA. I believe you said that the system in the Moffitt Hospital had improved some, in all fairness, but I believe you also said that some of that improvement had to come about through legal action.

Dr. STRAUMFJORD. No. I said they threatened.

Dr. ROWLAND OF GEORGIA. Threatened legal action.

Dr. STRAUMFJORD. They were very unhappy.

Dr. ROWLAND OF GEORGIA. I see.

Are there any questions from the minority side?

Mr. WILSON. Doctor, what language is used by the private hospital?

Dr. STRAUMFJORD. I am not sure. I think it is COBOL. They are using an operating system that I am not familiar with at all—CYBOS.

Mr. WILSON. And what system is used at the Haley Hospital?

Dr. STRAUMFJORD. MUMPS.

Mr. WILSON. Thank you.

Thank you, Mr. Chairman.

Mr. MONTGOMERY. Are there any additional questions?

[No response.]

Thank you so very much for coming. We do appreciate your testimony.

We will stand in recess until 2 p.m..

[Whereupon, at 12:30 p.m. the hearing was recessed, to resume at 2 p.m. the same day.]

AFTERNOON SESSION

Mr. GRAY [presiding]. The subcommittee will please come to order. Our first two witnesses are two distinguished doctors, Dr. Paul Schafer, Executive Director of the National Association of VA Physicians and Dr. Ross Fletcher, Chief of Cardiology at the VA Medical Center, Washington, D.C.

On behalf of the committee, we'd like to welcome you two very distinguished doctors. We appreciate your coming. Dr. Schafer, you may proceed in your own fashion.

STATEMENT OF PAUL SCHAFER, M.D., EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION OF VA PHYSICIANS, ACCOMPANIED BY ROSS FLETCHER, M.D., CHIEF OF CARDIOLOGY, VA MEDICAL CENTER, WASHINGTON, D.C.

STATEMENT OF DR. PAUL SCHAFER

Dr. SCHAFER. We are very pleased to be here to make a few remarks for the committee. My name is Paul Schafer. I'm a physician, actually a surgeon. I appear here today in an unofficial capacity in respect to the Veterans' Administration but rather as the Executive Director of the National Association of VA Physicians, otherwise known as NAVAP.

I'm the full time Chief of Thoracic Surgery at the Veterans' Administration Hospital here in Washington. My current identification is as Professor of Surgery, Georgetown University. I'm accompanied by a fellow NAVAP member, Dr. Ross Fletcher, Chief of Cardiology here at our hospital who will illustrate the most salient points in my abbreviated presentation, a full copy of which I present for the record.

Mr. GRAY. Without objection, your entire statement, Doctor, will be printed in the record verbatim.

Dr. SCHAFER. As you know, Mr. Chairman, NAVAP became involved in the data processing issue 5 years ago as we learned that a whole host of prototype programs developed by VA personnel were not only being withheld from serving our patients but were actually being considered for deconstruction. Worse than that, we learned that the Agency during the prior decade had squandered $200 million on various data processing entrepreneurial efforts to create specifications for programs to be used by VA health care personnel.

VA doctors and patients were without a nickel's worth of program product to show for it. It was thus that we joined in the successful efforts of this committee which resulted in the Decentralized Hospital Computer Program, DHCP, that is now up and running at 129 of our medical centers and many of our 220 outpatient clinics.

This remarkable endeavor is passing through its initial core program phase and is poised for its next incremental enhancement for which adequate funds were appropriated in the current fiscal year. The program meets users' needs even better than anticipated. It has moved speedily forward and is remarkably cost effective.

Being in the public domain, being hardware independent, free of proprietary costs, and most particularly because of its effectiveness, the DHCP has been adopted by the Indian Health Service and its medical administrative module, which the Department of Defense calls its AQCESS program, is running in all military hospitals.

NAVAP has maintained its keen interest in the DHCP, has observed its progress, and has carefully watched its evaluations by others, all of whom have been identified in testimony here today.

We have not had a chance to see the General Accounting Office report. We have also looked carefully at the material being disseminated by the contractors who have put up proprietary systems at the three IHS sites, which have also been identified. Sadly, we have also watched the Department of Defense repeat the VA's pre-DHCP errors. Over the past 15 years, they too have spent over $200 million developing specifications for programs without having produced a single one.

NAVAP has a professional commitment to proficiency in use of information technology for the benefit of veterans' health care. We are interested in all evaluations of the efficiency and effectiveness of the DHCP so that this information technology's best use can be identified and existing application modules refined.

As you will note from my submitted materials, NAVAP is initiating its own review of the studies that have been conducted and will develop its own assessment based on useful information. NAVAP's preliminary findings are that the studies we have reviewed contain some useful information but suffer from faulty premises, inadequate evaluation criteria and particularly from methodological weaknesses. The Appropriations Staff Study stands apart in that it exhibits no analysis and no effective methodology for fact gathering and verification. Moreover, its assumptions have not been established and its conclusions cannot be supported from the items it describes. It is of no help.

The problem with all these studies to a greater or lesser degree is that they focus exclusively on a limited technical data processing perspective without considering broadly the role of information technology and the primary purpose of delivering health care effectively, efficiently and safely. The evaluations have totally neglected the missions of medical education and research that are part of the DM&S responsibility. They do not recognize that there is an emerging field of medical informatics and that the DHCP is playing a central role in this new discipline in medicine. They fail to recognize the substantial body of health services research relevant to these issues. Overlooked entirely are the functionalities beyond the VA File Manager and Kernel conventions which have been employed by users to create program prototypes.

There seems to be no awareness that programed logic is soon to be added as a quantum jump in DHCP functions and that Augmented Transition Networks and expert systems, artificial intelligence, if you will, are on the near horizon.

Mr. Chairman, the message I bring to your committee is that the DHCP reflects prototype programs created by health care professionals using information technology for the benefit of veterans. This is so unlike programs created by data processor specifications to which health care professionals and veteran patients are expected to conform, with changes coming only with delay and huge recurring costs.

I would now like you to hear first hand from Dr. Fletcher, our cardiologist here, who together with his fellow physicians vividly illustrates how our Veterans' Administration's DHCP is actually being used right now to provide for thousands of veterans, health care of unmatched quality with such efficiency and with such minimal costs as to be almost unbelievable.

I thank you.

[The prepared statement of Dr. Schafer appears at p. 216.]

Mr. **Gray**. Thank you, Dr. Schafer, for a very informative statement. Dr. Fletcher?

STATEMENT OF DR. ROSS FLETCHER

Dr. **Fletcher**. Thank you. In addition to being Chief of Cardiology at the VA, I am also Clinical Chief of the Eastern Pacemaker Surveillance Center and Chairman of the Special Interests Users Group for Cardiology Software in the VA.

I represent the use of the DHCP and its primary tool, the versatile VA Fileman, both before its actual implementation in our hospital and during the current applications. I am involved heavily in organizing my fellow physicians, cardiologists, to contribute time toward future developments, many of which are in advanced stages of actual use and testing. I do not want to see this progress delayed.

My fellow physicians initially set up databases to track new antianginal and antiarrhythmic drugs. Their success stimulated them to create files for all our cardiology procedures.

The most far reaching early application was the file generated for implanted pacemakers. This encompasses 18 primary files, over 145 specific fields which can be entered during multiple telephone and clinic follow-up visits from our center.

The VA set up a national pacemaker registry and our surveillance center for all veterans with pacemakers. We loaded the program already present onto a larger computer and became operational almost immediately and are now following over 5,000 patients directly by telephone with remarkable efficiency.

Our technicians accurately and safely can follow up to 800 veterans individually which includes evaluating the patient and his electrocardiogram, updating the file, producing detailed, tabulated and graph reports.

We have since acquired the running of the VA national registry which contains 20,000 patients.

While this system preceded the DHCP, it is in the VA FileMan and we are anticipating the advantages of meshing this with DHCP in its integrated database. We will undoubtedly register patients through that system and send reports to individual hospitals and their databases.

A natural outgrowth of the pacemaker surveillance and the cardiology files we created is an integrated cardiology database. Our local files were enhanced by cardiologists from 7 VA regions forming a special interest users group. The files were restructured to become part of the core in the national DHCP software. As a result, a summary option on any terminal in our hospital lists all cardiology procedures by date on a given patient and provides a summary result of these important tests. Each option can be expanded to a full report on each procedure.

We have been in Alpha tests since December 15th and our doctors have been able to see these tests for that period of time on cardiac catheterizations, tread mill testing, Holter monitoring and echo cardiograms.

The presence of the cardiology data on the hospital system brings unexpected benefits since our files are in a database completely networked and integrated with the medical administration, pharmacy and lab packages.

We in cardiology became able to administer a medication, HMG Co-A reductase inhibitor, which not only lowers total cholesterol in the blood but proportionally increases the scavenger good high density cholesterol. In 15 minutes with a routine from the standard lab package added to our hospital physicians' menu, I produced for our lipid clinic 400 names of patients and their physicians whose cholesterol exceeded 240 milligrams percent. Most of these patients were notified and many were provided with advice or therapy to lower their lipid levels and thus prevent coronary artery disease.

I strongly urge the continued use and development of the DHCP system which so successfully meets the needs of our administrators, lab directors and physicians and most importantly, the veteran patients. The veteran patient not only benefits from fast reliable retrieval but I'm sure many of the competent physicians who choose to work in VA hospitals are attracted and retained by the ease of retrieving data and the opportunity to organize creatively their areas of expertise for large groups of patients.

Thank you.

[The prepared statement of Dr. Fletcher appears at p. 229.]

Mr. GRAY. Thank you, Dr. Fletcher. We appreciate both of you being here.

Dr. Schafer, I notice you are Executive Director of the National Association of VA Physicians. How many constituent members do you have in your association?

Dr. SCHAFER. Well, I have to answer that in two fashions, if you will. By definition, all physicians employed by the Veterans' Administration, whether full time or part time are members. I think the question you really were asking is how many pay their dues and actively support us and that varies very much with the year and with the issues that are at stake.

Back when we were talking special pay, for example, we had a very substantially larger number supporting us than we have at the present time when issues such as this, though they should be right up on the front burner, if you will, don't hit quite as sharply home as the take home pay check.

In specific numbers, I can give you these. With some consistency, we almost always have a majority of full time VA physicians. Now there are some 6,500 of those and we run somewhere around half of them. We don't fare so well with the part time physicians, the ratio being full time to part time, somewhere around 10 to 1.

The numbers will vary anywhere from a low in a given year of perhaps 2,500 to a high in another year of about 4,000.

Mr. GRAY. I was trying to determine the mechanics of whether they were on board with your views and your testimony.

Dr. SCHAFER. The reason why I can answer that question is that we are very well structured as an organization. We have a slate of national officers and we have consultants of different kinds. In addition, we are organized into 13 regions. These are evenly distributed as to size and geographic distribution and in each of those we have a district director and in addition to that, in almost all of the medical centers, we have a chapter, each with a slate of officers and liaison personnel.

What we did and some of the members perhaps realized this, we went out with one of our issues of monthly NAVAP News with this as its feature last month. I can only tell you we have been deluged with phone calls and letters from folks out in the field. Furthermore, this was on the agenda of our last monthly Board of Directors' meeting.

I speak here today with confidence that what I have told you is supported by our organization.

Mr. GRAY. I understand your organization is conducting an evaluation of the various reports that have been made on the DHCP and the IHS programs. Would you mind for the record telling the committee what the preliminary evaluation report entails?

Dr. SCHAFER. You will notice in the materials I submitted in my full report that there is a considerable amount of that information available but what I would like to say just by way of a general preliminary statement is that it seems to us that as I indicated in my abbreviated remarks, the thing that all of these evaluations have missed so completely is the lack of the central focus of why we are here in the first place. That is the veteran patient and the health care professionals who are charged with the responsibility of giving first quality medical care to our veterans.

Dr. Fletcher has described one of many, many examples that are focused directly on our charge, namely the patient and that patient's well being and the health professional's ability to give that first quality care that we all strive for.

When we are developing prototype programs that emanate from that point of focus, it is entirely different than data processing personnel developing specifications that they think will fit the situation and they almost never do or at least if they do, not in a fashion comparable to what it is that we have generated inside the agency itself.

Mr. GRAY. Dr. Schafer, have you evaluated the Appropriations Committee's staff reports? We are working with the Appropriations Committee on this matter. I was wondering if you had provided them with recommendations on their report.

Dr. SCHAFER. I hesitate in my response to that question because it could be quite acerbic and I would like to keep this on a high plane of professionalism.

Mr. GRAY. That's why we turned the red light on.

Dr. SCHAFER. Actually, it reminds me very much of the way our culture is described in the Soviet press. Those of us who live here know it ain't that way. Those of us who work in our medical centers and see the DHCP side from where we sit, we hardly recognize what was reported.

Mr. GRAY. Any similarity is purely coincidental?

Dr. SCHAFER. Perhaps.

Mr. GRAY. I notice our very distinguished full committee chairman has come in. I'd be delighted to yield to our chairman and then we have our distinguished ranking minority member, here, my friend Mr. Solomon of New York.

Mr. MONTGOMERY. Why don't you recognize the ranking minority member? He was here before me, Mr. Chairman.

Mr. GRAY. Mr. Solomon of New York.

Mr. SOLOMON. Mr. Acting Chairman, I didn't realize you were going to be like Sonny Montgomery and start these meetings on the second. I was here 2 minutes late and you were already going. I will have to give you credit for that. That's good. I apologize for being 2 minutes late and missing part of your statement, Dr. Schafer.

Just a couple of quick questions. You stated that the NAVAP is doing its own assessment of the VA computer situation. When will that be completed and would that be available to this committee by chance?

Dr. SCHAFER. We are hopeful that we can complete this if not by the late Summer, by the early Fall. We are going to be up against the common problem that all of us face about summer vacations. I'm a little bit reticent to give you a solid prediction as to time of completion but we should have our evaluation criteria no later than this Fall. We certainly will be pleased to furnish the complete report to the committee.

Mr. SOLOMON. We appreciate that very much. Dr. Fletcher, also, how much did the pacemaker surveillance program cost to develop and implement using DHCP that you were talking about in your prepared testimony?

Dr. FLETCHER. The actual cost was just that of the PDP 1144 on which it runs, since the software had been developed on a local computer that had extra space and we were able to put it up and have it run well on our own patients. It is of interest, for example, that when the computer that was somewhere like $100,000 when it first came in, arrived on-site, and the program was installed, all patients were in and running within a month, and that is a remarkable timeframe in and of itself.

The very fact that we can so efficiently run with just one technician allows us to come well under the costs that would be ordinarily charged. Each of those telephone calls that we make is charged between $25 and $50 in the private sector. Each technician, and when I say 800 patients, that is on the average a call every 2 months or 2,400 calls. You just multiply $50 times 2,400 and you know that our technicians are about $20,000 apiece and you can see that we have a very potent and efficient package to sell.

More importantly, we are developing information in our database which allows early warning of failures of these pacemakers. We know which ones are going to go bad. We report on these warnings at national meetings. I will be reporting at the NASPE meeting in May about the way we take the data from our pacemakers, each one that we have, over 40 of them, and generate an accumulative survival curve on those generators and then have a call frequency hinged on that survival rate. Again, in the private sector the calls would go out monthly whereas we will go out every 3 months on a generator that does not seem to have any trouble and go out monthly on those that are, and be able to follow a much larger group of patients.

I think we actually are setting a trend on how you make those calls and judge the frequency by our system.

This is on the VA File Manager. It is thus totally and completely compatible with the DHCP system which is also on the VA File Manager and many of its functions will mesh.

Mr. SOLOMON. Mr. Chairman, if you were listening to what Dr. Fletcher just had to say to Mr. Gray, I asked him the question, how much did the pacemaker surveillance program cost and what he told me was it cost nothing. That to me means a lot.

Mr. GRAY. We should adjourn the meeting right now.

Mr. SOLOMON. I also would just take note with how he answered that question because I think it leads to the other situation, Mr. Chairman, that we are dealing with here. It seems to me that Dr. Fletcher was very proud of what they have done. It was done in-house. It was done at no cost. That to me tells what this program is all about.

Dr. Schafer, I was also reading the end of your testimony, where you talk about hearing first hand from Dr. Fletcher, our cardiologist, who together with his fellow physicians vividly illustrate how our Veterans' Administration's Decentralized Hospital Computer Program is actually being used right now to provide for thousands of veterans health care of unmatched quality with such efficiency and such minimal cost as to be almost unbelievable.

I again appreciate both of you coming here and giving us your testimony. It really is most helpful.

Mr. GRAY. Thank you, Mr. Solomon. The Chair now yields to our very learned and distinguished colleague, Dr. Rowland of Georgia.

Dr. ROWLAND OF GEORGIA. Thank you very much for your testimony. Dr. Schafer, you said you had been deluged with correspondence from physicians about the DHCP. Did you hear from any physicians in the three test sites, where the commercial systems are now?

Dr. SCHAFER. I don't believe I did, Dr. Rowland.

Dr. ROWLAND OF GEORGIA. You didn't hear anything from them?

Dr. SCHAFER. I would have to check because there were so many and I wasn't paying too much attention to where they came from. I don't really believe I did hear from Big Springs, Saginaw or Philadelphia.

Dr. ROWLAND OF GEORGIA. We really don't know how the physicians in those areas may feel about the systems they have in place at this point.

Dr. SCHAFER. So far as I can recall, I do not believe I have had calls from them.

Dr. ROWLAND OF GEORGIA. There has been a strong feeling from all of those you did hear from in support of the DHCP. Did you have any negative correspondence about that particular system?

Dr. SCHAFER. Most of these have been phone calls rather than correspondence. The correspondence will come later. Our March issue of NAVAP News has only been out on the street now about 10 days. It had such an urgent requirement that folks become active and express their opinion, they did by telephone calls. It will be followed up by letters at a later time.

I can tell you honestly I have heard from only one physician who had a negative view about the DHCP and his negative view was that we need more terminals badly; we need more terminals.

Dr. ROWLAND OF GEORGIA. It has been very positive what you have heard about DHCP?

Dr. SCHAFER. Everything.

Dr. ROWLAND OF GEORGIA. Dr. Fletcher, let me ask you this; you are talking about being able to extract information from the system that you have. Let's say for example that you wanted to extract information about everyone who had paroxysmal atrial tachycardia. Would you be able to program that into the computer, the DHCP, in such a way that you could extract that if you wanted to do research or whatever?

Dr. **Fletcher**. Very easily and that is how our interest started as you might gather but we could easily find out how many people had paroxysmal atrial tachycardia. We could also ask how many had paroxysmal atrial tachycardia who had left atrial size above 4 centimeters. We could ask how many people had paroxysmal atrial tachyardia above four centimeters who had a filling pressure on the left side above 12 millimeters.

This search can be carried out not by a programmer. I don't have to ask anybody to do that for me. I can sit down at the terminal, go through the Fileman conventions and ask for those search results myself and get the answer at my terminal.

In the hospital system, in general, if we are loading it down with such searches we sometimes get some irritation at the other end but we have within the VA Kernel a very fine task manager that allows you to have these things printed out at delayed times.

So I could search at 3 o'clock in the afternoon and have my print-out at 6 p.m. or 6 a.m. and read it the next morning so it works out very fine from that point of view.

Dr. **Rowland of Georgia**. So that is a very highly sophisticated program that you have worked up. We heard earlier in testimony that the DHCP was a somewhat outmoded system that really was somewhat antiquated and wasn't doing the job that could be done by other systems.

But based on what you have said, that is really not so. It seems to me that you have really developed a program in this system that will do almost anything that you want it to. It will be a great aid in research and in developing treatment modalities and diagnostic modes that will keep the VA out in front. Do you sense it in that way?

Dr. **Fletcher**. I sense it in that way and as I mentioned, I think it does retain physicians like myself. I was telling someone in the back of the room that that meant that I probably wouldn't be here in the VA system had the computer not come down the line and we have been able to move out in this very fine fashion because we are able to do better than we can in most other areas.

In the brochure that we submitted in this presentation, there is a sample of an actual search that was taken in the Pacing System. When we got wind that the lead, the 6972 Medtronic lead, was failing we immediately searched through that system as physicians through the File Manager conventions and got a list of the hospitals were all those leads were occurring, the list of patients where they were, immediately called those hospitals.

I actually deployed a group of my technicians to those centers and took special Holter tapes and weight/form analysis on those and reported them to the next American Heart Association meeting. It is an extremely versatile and very fine system.

Dr. **Rowland of Georgia**. Mr. Chairman, I believe we have just heard the strongest statement possible about the support of the Decentralized Hospital Computer System from Dr. Fletcher and Dr. Schafer. I just do not believe that anybody can make a stronger statement than has been made in support of that system. When we are talking about quality medical care, retaining top-quality medical personnel and it seems to me that this Congress is tinkering around in an area where it don't need to be tinkering.

Mr. GRAY. I agree with you. Now it is a pleasure to yield to our distinguished chairman.

Mr. MONTGOMERY. Thank you very much, Mr. Chairman. I agree with you, Dr. Rowland, that this is fine testimony we are hearing from Dr. Schafer and Dr. Fletcher and I want to thank you for being here today, for taking your time, as well as the rest of the witnesses.

I think, Dr. Schafer, we get involved so much on computers and decentralization and vendors' computers that maybe we ought to keep bringing up really what the purpose is, and that is for quality health care for the veteran. That is it. That is the bottom line and you did mention that.

Are you satisfied with the DHCP, that it is doing the job of helping you take care of the veteran and, as you represent the VA doctors across the land, that this system is about as well as you could do as far as updating and taking care of the veteran on a health care basis?

Dr. SCHAFER. I am just amazed that we have gone so far so fast. This is an enormous undertaking to furnish data processing support to this entire health care delivery system. We are just through the initial core phase of the program. The enhancements that will come if this money can be made available to us promptly will move us very substantially forward beyond where we are.

But we have just started. The program that you have heard Dr. Fletcher describe is only one of many programs and we have not even gotten to some of the prototypes that are up now that do really represent artificial intelligence, expert systems that will tell us of many ways to help our veterans that nobody ever dreamed of up until now.

So the answer to your question, sir, is yes. I think that we are very satisfied with where we are. We are only just eager to go forward and be better satisfied if you will.

Mr. MONTGOMERY. If the worst came to worse and we had to pull out all of these systems and start over, what would be your feeling and your position if this did happen?

Dr. SCHAFER. Dr. Gronvall used an adjective that I think was an understatement when he called it a disaster. It truly would be a disaster. We have such high morale now. We have such eagerness to proceed with accomplishment. We have so many people who are dedicated who are now trained in the use of this language and data base management system that is so uniquely right for doing what it is that we need to do.

We have this most remarkable File Manager which allows users, doctors, nurses and other health care professionals to build their own prototype systems. They can actually start off with just an embryonal model if you will and then enhance it as they try to use it and correct things they don't like, add things they like and to have to come back now and rely on some specifications, to rely on programmers to not be able to do these things themselves.

After all, what you heard Dr. Fletcher describe, he did it. This was not done by a programmer. This wasn't done by a data processor. It was done by a doctor. That is what we now have.

To come in and require them to learn COBOL if you will, to learn COBOL conventions, to use a much simplified more basic language, I think would just be a terrible effect which I hope we don't see.

Mr. MONTGOMERY. We are certainly going to do everything we can and I think we have a chance. That is why I wanted to be sure that some Appropriations staff people were here. I talked to Mr. Eddie Boland about it at noon and he said a staff person from the House Appropriations Committee would be here and would hear testimony like we have received this morning and this afternoon. Thank you.

Dr. Fletcher, I assume you would have to start all over. It would bring a disaster to the research and development that you are doing if we had to take this system out?

Dr. FLETCHER. Yes. I am very much against taking the system down. We have obviously plans that are going out over not only this year but a couple of years to come that have already started. We are moving strong. We are in Alpha Test in our hospital with the cardiology package. If we had to re-do that and reorganize it in some other way, we would probably be delayed quite some period of time.

We have these other applications that are on the move. For example, at our hospital we are implanting defibrillators. We are one of the few VA's that are doing so. Prior to the first implant, a full file was set up in the File Manager and every patient that has had that procedure done which is a rather expensive procedure has been fully documented and those files will be the nidus of a file to track on a national basis the defibrillators that are implanted in the VA system.

So we just see this coordination working so well together and I find the personnel that I get help from from time to time in the DHCP site manager and the ISC region people just so willing to lend a hand at rather unusual hours.

I think if you walked into the VA in Washington at 7 p.m., you are used to the idea that government workers go home at 4:30, but you will see me and three or four programmers as well as a couple of my staff busy at work at this process usually after hours because we know it has a very, very high yield and allows us to be much more productive as physicians and give better care to the patient.

Mr. SOLOMON. Would the chairman yield just for a moment?

Mr. MONTGOMERY. Yes.

Mr. SOLOMON. Mr. Chairman, I think we just ought to point out, that, Dr. Schafer is a man with not only a reputation as a good outstanding doctor but he also has a reputation for telling it like it is. We have had him before this committee before and have heard him criticize the VA.

He is here today and as Dr. Rowland has said, I don't think anybody could make a better case for the system that we have than he has today and I think the fact that he has stood up on occasion and criticized the VA when they need criticizing, I think, just lends credibility to all of his testimony we are hearing today and I, for one, on behalf of all of us, thank you, Dr. Schafer.

Mr. GRAY. Thank you, Mr. Chairman. The Chair now recognizes our distinguished friend and very strong supporter of veterans' causes, the gentleman from Florida, Mr. Bilirakis.

Mr. BILIRAKIS. Thank you, Mr. Chairman. I had hoped that I could get here before Dr. Straumfjord finished his testimony and I just merely want to welcome him here even though I am doing it on a belated basis.

I just really had one question of Dr. Schafer and Dr. Fletcher and possibly Jerry has already covered it but I wanted to know basically why is it that you are here today? In other words, were you requested by Dr. Gronvall to come to testify? How did all of this come about? Basically, I think it is consistent with the comments Mr. Solomon may have just made about you and your background and your character and all that but do you have anything to offer in that regard?

Dr. SCHAFER. Well, I guess it just seemed natural because back in those earlier days that I mentioned, back in 1980 the reason I got interested in data processing was that it happened to be that programs I had developed using the File Manager were threatened with being destroyed and I couldn't imagine why that would be.

As I began to inquire, then I found out what was going on and from that moment forward because of the utter irrationality of what was taking place, I became a spokesman, if you will, for doing something to salvage all of these programs and over time, as Mr. Solomon has mentioned, I have been in here speaking on data processing issues at the invitation of the committee.

On some of those earlier occasions, I certainly disapproved heartily of what was going on among some of our technocrats in the agency and I didn't hesitate to speak to that point and I would do the same again if I felt that we weren't on the right track.

In respect to this hearing, I guess, in fact specifically and officially I was asked if I wished to testify and because I think the issue is so vital, I said "Certainly."

Mr. BILIRAKIS. You were asked by whom, sir?

Dr. SCHAFER. By the chairman.

Mr. BILIRAKIS. Dr. Fletcher, how did you come to be here, basically the same way?

Dr. FLETCHER. Well, Dr. Schafer came by and mentioned the problem and wondered if I would help and I immediately said "Yes." I was not due in town today. I was at the Engineering Foundation. However, my paper was presented Monday night and I took an early plane back and came in not only that but jeopardized my talk down there because this particular talk had to be put together before that one so that talk was put in on the plane on Saturday and a little bit on Sunday and it was given successfully on Monday, I might add.

But I felt very strongly that if someone had any feeling that I could help make this program go forward that it had done so much for us and so much for our patients that I should speak of.

Mr. BILIRAKIS. You are in the field, sir. Have you heard many or any negative comments on the program, on the current system as it now exists?

Dr. **Fletcher**. No, sir. The negative comment is sort of the same from my staff, they need a terminal. They want to get at it and once I get one for them somehow someway and I have even as you might find it a little bit ridiculous but I have even walked down with friction tape and wire and so forth just to install one to get them off my back.

But as soon as they have the terminal and they can go with it, terminals are very inexpensive, they are about $300.00 a piece, they are very happy people, they can get their lab tests back fast, they can get the pharmacy data back fast, they can find out exactly where their patients have been transferred and I think when they start to see these other developments come out on their terminals they are going to be even happier.

It actually in many ways reduces the phone calls and a lot of the busy work that comes into my department because the person out in the ward now can look up and see if the Holter has been done and see the result rather than keep asking what is it over the telephone.

I have spent lots of time doing a lot of nonsense things that the system has greatly helped. We had a secretary full-time typing out cath reports at one time. At this moment when a physician finishes his catheterization, he sits down at a terminal, he enters the data, he has a report within about 15 or 20 minutes, not only that but anywhere in the hospital there is a report as well.

This is not the current system but it is the immediate future. It is in actual use in our hospital and we hope that it will continue and be deployed throughout the system.

Mr. **Bilirakis**. Thank you, doctors. Thank you, Mr. Chairman.

Mr. **Gray**. Thank you, colleagues. Thank you Dr. Schafer and Dr. Fletcher. We appreciate so much your coming. We will now call panel one made up of James Magill, David Gorman, and Ted Darlington. Would you gentlemen please come forward. Mr. Magill is director of the National Legislative Service, Veterans of Foreign Wars. Mr. Gorman is Assistant National Legislative Director, Disabled American Veterans accompanied by Ted Darlington of the Service Center Director, National Headquarters.

Gentlemen, we are all delighted to see you and deeply appreciate your appearance here this afternoon and you may proceed in any fashion among yourselves, whoever would like to start off first, Mr. Magill, I introduced you first if you would like to begin first, you may proceed.

STATEMENTS OF JAMES MAGILL, DIRECTOR, NATIONAL LEGISLATIVE SERVICE, VETERANS OF FOREIGN WARS; DAVID GORMAN, ASSISTANT NATIONAL LEGISLATIVE DIRECTOR, DISABLED AMERICAN VETERANS, ACCOMPANIED BY TED DARLINGTON, SERVICE CENTER DIRECTOR, NATIONAL HEADQUARTERS

STATEMENT OF JAMES MAGILL

Mr. **Magill**. Thank you, Mr. Chairman, for the opportunity to present the views of the Veterans of Foreign Wars with respect to the VA's automated data processing system in its health care system.

At the outset what is of paramount importance to the Veterans of Foreign Wars is that the VA provide the highest quality care possible to our Nation's veterans in a timely manner.

While we do not support any one particular computer system, we do insist that whichever system is utilized meets the needs of the VA and its veteran patient.

We all know that there has been a challenge to the capabilities of the DHCP in meeting the needs of the VA. We also know that DHCP is installed in 169 out of 172 hospitals. What disturbs the VFW is that should the VA be forced to change systems further delays will be encountered. To this, the VFW is opposed.

As to the question of DHCP meeting the needs of the VA, I can only state that the VA itself says, "DHCP is doing the job." I can add that our field representatives who routinely survey VA medical centers also state that DHCP is meeting the VA's needs and that there is a high user satisfaction with this system.

The VFW can only question the wisdom in abandoning an existing system which has been in full support of its users and is deemed adequate for a more costly system.

We also must keep in mind that the VA has already invested $200 million dollars in DHCP.

Mr. Chairman, because DHCP is already a fixture in 169 out of 172 medical centers, since it has been stated that DHCP meets the VA's needs and can be enhanced in future years to meet the VA's needs and for the most part, DHCP is completely in place and will not result in any further delays, the VFW believes the veteran patient as well as the VA will be better served by the VA's continuing with DHCP.

As stated previously, DHCP is in place and working. Any changes at this point will only cause delays and be detrimental to the veteran.

This concludes my statement.

[The prepared statement of Mr. Magill appears at p. 252.]

Mr. Gray. Thank you very much, Mr. Magill. Mr. Gorman.

STATEMENT OF DAVID GORMAN

Mr. Gorman. Thank you, Mr. Chairman. I would like to introduce sitting on my right, Mr. Ted Darlington, who as you indicated is the service center director of our data processing unit at our national headquarters in Cold Spring, Kentucky. Mr. Darlington has been in that position for about 20 years and brings a great deal of expertise as far as data processing that if necessary we will be able to tap this afternoon.

Mr. Chairman, in view of the recent controversy that has arisen in Congress and in other quarters concerning which system whether it be DHCP or IHS would best meet the needs of the VA health care system, the DAV conducted site surveys of five VA medical centers last month.

Those surveys were conducted at VA medial centers in Saginaw, Michigan; Allen Park, Michigan; Hines, Illinois; Philadelphia, Pennsylvania and Tampa, Florida and were conducted by myself and Mr. Darlington.

The purpose of those surveys was quite simply to determine the capabilities of DHCP and IHS to provide enhanced patient care.

There was one common conclusion gained from our visit of each facility and that was the users of each system were extremely pleased with the increased efficiency of hospital operations provided by an automated hospital information system.

A common finding at these facilities also was the enthusiasm, dedication and the commitment of management to totally support their respective system. Additionally impressive was the level of competency in the automated data processing staff that lent technical support and training to the users.

We have had, Mr. Chairman, the opportunity to review the assessments of DHCP and IHS conducted by Booz-Allen and Hamilton, Price Waterhouse, the VA Inspector General and the surveys and investigations staff of the House Committee on Appropriations. Additionally, we have been briefed individually by both the Veterans' Administration and McDonnell Douglas regarding their respective systems.

Quite frankly, Mr. Chairman, the information we have been presented is both confusing and contradictory. Therefore, we do not feel to be in a position to offer any kind of a firm opinion on the total cost or the time required to install either a DHCP or an IHS system in all 172 VA medical centers.

We are, however, in a position to opine that the Decentralized Hospital Computer Program is certainly capable of meeting the needs of the Veterans' Administration and specifically the Department of Medicine and Surgery.

But this can be accomplished only if certain conditions are recognized and resolved by the Veterans' Administration. First, in our opinion there appears to be an urgent need for the VA to install additional hardware to support the necessary software required for more clinical and administrative applications to become functional.

Second, the VA must make a commitment to dedicate sufficient resources to support adequate ADP staffing at all VA medical centers to provide needed technical support and training functions. Sufficient and competent staff are vital to the success of DHCP.

Third, centralized planning, direction and control should be strengthened within the VA.

Quite frankly, the DAV does not necessarily support or oppose any particular system or approach.

Our singular concern is that the VA be provided with the most viable and efficient computer system available that will in the long run enhance the mission of providing quality health care services to eligible veterans.

Mr. Chairman, we are very concerned that until such time as a consensus is reached as to what system will be utilized by the VA, that the DHCP system cannot afford to be compromised.

To this end, we recognize the need for the procurement of additional hardware to maintain the process of hospital automation.

To that end we, therefore, support fully the VA's plans to obligate fiscal year 1987 appropriated funds, for the purchase of additional needed equipment to be placed in their respective medical centers.

Mr. Chairman, that concludes my testimony.

[The prepared statement of Mr. Gorman appears at p. 255.]

Mr. GRAY. Thank you, Mr. Gorman. Mr. Darlington, do you have a statement?

Mr. DARLINGTON. I think Mr. Gorman's report covered our position very well.

Mr. GRAY. Thank you. We are delighted to have you. Mr. Magill, I wanted to ask you about your statement that the VFW has found high satisfaction with the DHCP? Would you have any idea as to how many site visits you have actually made out in the field in the various hospitals?

Mr. MAGILL. I would say our field representatives survey approximately 18 to 22 hospitals each year.

Mr. GRAY. Each year?

Mr. MAGILL. Yes, sir.

Mr. GRAY. And you pretty much found uniform satisfaction in the system?

Mr. MAGILL. Yes, sir.

Mr. GRAY. So you have had a pretty good run, 18 different locations scattered all over the country?

Mr. MAGILL. Yes, sir. That would be across the entire United States.

Mr. GRAY. Mr. Solomon, do you have any questions of our distinguished panel?

Mr. SOLOMON. Mr. Chairman, you just asked the question I had with the VFW. I will ask, Dave, in your testimony you said that we urge the VA to move swiftly in the direction or improved management of DHCP in order for it to remain a viable system. Is the VA taking action to improve management in your opinion?

Mr. GORMAN. I believe they are at this time, Mr. Solomon, and I say that only from the testimony we heard this morning from the Chief Medical Director as far as implementing procedures to strengthen the management of DHCP.

Mr. SOLOMON. Mr. Chairman, I don't have any further questions at this time.

Mr. GRAY. The gentleman from Florida, do you have any questions?

Mr. BILIRAKIS. Just very quickly, can we basically summarize your conclusion that you favor retention of the current system? Is that basically what we are saying?

Mr. MAGILL. Yes, sir.

Mr. BILIRAKIS. You are taking a position. Dave.

Mr. GORMAN. Mr. Bilirakis, what we have heard when visiting the various VA medical centers utilizing from the DHCP and we have, as Dr. Schafer has, received a number of phone calls from VA employees in the field and some correspondence and the result that we are hearing is that any interruption of the progress of DHCP at this point in time would be disastrous for the system.

Therefore, we have maintained and continue to maintain that the obligation of the fiscal year 1987 funds to purchase that additional hardware is certainly warranted.

Mr. BILIRAKIS. Thank you. Jim, that says it for you, too?

Mr. MAGILL. Yes, sir, it does.

Mr. BILIRAKIS. Thank you, Mr. Chairman.

Mr. Gray. I thank my colleagues and as usual, the DAV and the VFW always impart valuable information to this committee. We appreciate so much your coming. Thank you.

Our next panel is made up of some very prominent medical center directors from around the country. We have Mr. Malcolm Randall, director of the VA center in Gainesville, Florida; Mr. John Fears, director of the VA medical center in Hines, Illinois; and Dr. Ronald Ginsburg, chief, clinical pathology, VA medical center, Albany, New York.

Would you gentlemen please come forward and have a seat? On behalf of the committee, we're very appreciative of you coming. And Dr. Ginsburg, we will start with you, and you may proceed in your own fashion.

STATEMENTS OF MALCOLM RANDALL, DIRECTOR, VA MEDICAL CENTER, GAINESVILLE, FLORIDA; JOHN FEARS, DIRECTOR, VA MEDICAL CENTER, HINES, ILLINOIS; AND RONALD GINSBURG, M.D., CHIEF, CLINICAL PATHOLOGY, VA MEDICAL CENTER, ALBANY, NEW YORK

STATEMENT OF DR. RONALD GINSBURG

Dr. Ginsburg. Mr. Chairman, thank you for giving me the opportunity to present testimony on the Decentralized Hospital Computer Program or DHCP within the VA.

My name is Ronald Ginsburg. I am Chief of Anatomic Pathology at the Veterans' Administration Medical Center, Albany, New York, and Associate Professor of Pathology at the Albany Medical College. Since I'm not a full professor, I try not to talk as long as a Full Professor would normally do.

The following DHCP modules are running at Albany VA medical center at this time and in their current version. We have admission discharge transfer including means testing. We have clinic scheduling, out and in-patient pharmacy. And the in-patient pharmacy is full in-patient pharmacy including IV, ward stock and unit dose.

We have the lab package including chemistry, hematology, microbiology, blood bank and anatomic pathology. We have the radiology package which includes film tracking. And this film tracking is going to be the module for medical records tracking. Also running at our facility is dietetics, social work, mental health and engineering.

In the near future we're planning to install the nursing package and integrated funds distribution control point activity accounting procurement, also known as IFCAP, which will simplify the control point activities for all services to supply and fiscal.

DHCP is a vital tool for me in my practice of pathology. Let me give you an example of how I use DHCP. This is an actual case, but I'm not using any names obviously. Let me give you the example, a 67-year-old veteran is in the operating room having surgery for a tumor pressing on his lower spinal cord. The neurosurgeon removes a piece of the tumor and sends it to me for a rapid diagnosis, or otherwise known as a frozen section.

While the specimen is being processed for microscopic examination, which takes about 3 minutes in our facility, I go to a nearby computer terminal and via DHCP obtain the patient's list of all prior material in our pathology files. Then at the same terminal, review his special X-ray studies of the tumor area and laboratory tests. From the list I find he had a cancer removed from his large intestine 2 years ago, retrieve the old microscopic slides and the complete previous report and review them.

Now the slides prepared from the tumor sent from the operating room are ready to examine. The tumor is identical in appearance to the prior cancer of the intestine. I can now tell the neurosurgeon the tumor he is operating on most likely represents distant spread of the patient's colon cancer. The surgeon can now make a decision as to how he should proceed without any doubt whatsoever.

The whole process took 3½ minutes from the time I received the specimen. And I think this clearly illustrates integration of the various modules in DHCP.

Some other experiences I've heard from other users of DHCP within our facility and others, let me just relate a few. Physicians are using DHCP to look up lab and X-ray results, clinic appointments, admissions and when necessary patient's phone numbers.

We have one chief of urology at our facility who, on occasion, has to call patients up at their homes and have them come in for early clinic visits because of some findings that occur on review of their records. For one specific patient from Saratoga, we didn't have a Saratoga phone book and it was very difficult to call the patient. Now the phone numbers are right there at his fingertips.

Telephone calls to the laboratory and radiology for patient results have been reduced practically to zero. And the only time we really do get phone calls is when a physician can't get to a terminal on the ward. This saves tech time, and it also saves a lot of clerical time. And our chief of radiology told me that the amount of clerks that he needs has been reduced considerably.

This also eliminates errors transmitted by oral reports. And there is on-line information, up to the minute, for all laboratory tests and procedures, so that a nurse, ward clerk or a physician in the ward can look up a special test to find out just what it is they need to—how to prepare the patient for collecting a specimen.

If DHCP were removed from VA medical centers, I feel it would be like shutting electricity off in the home. We have come to heavily depend on DHCP to provide a wide variety of information services, from patient care to management assistance.

Could another system meet our needs as well? I don't know. Could another system better meet our needs? I doubt it. What I do know is that we now have in 169 VA medical centers DHCP and it meets our needs very well. We don't have a Chevrolet for a Chevrolet price, I feel. I feel we have a Cadillac for a Chevrolet price.

DHCP has been driven by persons who use the computer as a tool in their job. We saw that earlier this afternoon, and I just want to emphasize that again now. These users have had an input into the development, implementation, modification process and maintain continuing interest via the special interest user groups for each module of DHCP.

DHCP has been developed entirely within the VA by VA staff for the care of our veterans. I feel the system is an excellent one. It is cost-effective and should not be replaced. Thank you.

Mr. **Gray**. Thank you, Dr. Ginsburg. Mr. Randall, we'd be delighted to hear from you now.

STATEMENT OF MALCOLM RANDALL

Mr. **Randall**. My name is Malcolm Randall. I'm the Director of the VA medical center at Gainesville, Florida and also the Medical District Director for Medical District 12.

Gainesville is a 478 bed acute tertiary care hospital, fully affiliated with the University of Florida. We also have a 120-bed nursing home care unit and two satellite out-patient clinics, one at Jacksonville, Florida and one at Daytona Beach. We serve approximately 120,000 out-patient visits a year at Gainesville. Jacksonville sees approximately 50,000 a year; Daytona Beach about 36,000 a year.

First I'd like to give a brief summary of the DHCP system as it now operates at Gainesville. In terms of equipment, we have four central processing units, 250 terminals and 60 printers. Some of these printers are located at our satellite out-patient clinics in Jacksonville some 75 miles away, and in Daytona Beach, approximately 100 miles distant.

In terms of implementing the core programs, at the present time we have fully implemented all aspects of the medical administration system, consisting of admission, discharge, transfer, patient scheduling, patient treatment file, the automatic management information system. We've also fully implemented the out-patient section of the pharmacy program for filling and refilling prescriptions. And our laboratory system also has been implemented.

Since the beginning of the DHCP program in 1984 we've seen some significant successes and we attribute, in part, some of these successes to our ADP program. Since 1984 we've increased the number of out-patient visits which are seen at Gainesville by over 20,000 in the current fiscal year, compared to what it was 3 years ago. Through the use of the ADP program we have achieved cost efficiencies, economies of operations. We've improved operational savings which enhance the ability of our current physical plant, our current staff to increase our workload.

In addition to this, we've also been able to handle 5,000 additional out-patient visits at our Jacksonville out-patient clinic. And the Daytona clinic is funded for 25,000 visits per year but we're handling 36,000.

In our in-patient area we've made a number of changes that have been aided by the ADP program. Cost savings and operating efficiencies have enabled us to treat 1,000 patients each year more than we did 3 years ago. I would like to give just two examples to illustrate the importance of our ADP program, particularly in terms of the decentralized nature of DHCP and our ability to adjust locally our computer applications to meet local needs.

The first area is in contract administration. We have a number of areas, fee basis activities such as sharing agreements, home dialysis, home oxygen, which we have automated. And we estimate that we are now saving over $100,000 a year as a result of our ability to locally automate this program. This translates into $1 million savings over a 10-year cycle. Now we spent only a few dollars in staff time in order to develop this application.

I should mention another application that is made possible by our ability to adapt programs locally with DHCP. WIth the advent of third-party billing we acquire data for those patients who require a bill at the same time that they are entered into the computer in the admission process. This adaptation was made by our local people with the expenditure of very few manhours. A bill is thus automatically created.

We've already collected $225,000 this fiscal year. And at the rate that our collections are now running, we expect to collect between $600,000 and $800,000 this fiscal year. And this again demonstrates the versatility, the flexibility of the DHCP system and the relative ease with which adaptations can be made to fit local needs.

Another example is our residency contract. We now have placed our residency stipends on a contract with their affiliated university. As a result of this, the Veterans' Administration is saving over $100,000 a year in Social Security taxes alone. And further, we are now able to monitor and to control the assignment of residents so that we can make certain that the VA is receiving the FTE for which it is paying. We're able to monitor and control this only because we have the capability of the DHCP system and we were able to locally adapt this application at practically no cost.

These three items alone illustrate the tremendous value to our operation, in addition to the primary value. And that is, the enhancement of our patient care system. There are substantial improvements to patient care and I won't go into all of them because you've already heard examples of this. But suffice it to say, the DHCP system has made a significant impact on patient care and on the ability of our physicians to deliver patient care.

To hold up equipment procurements at this time, I think would compromise our ability to continue to increase our effectiveness, to continue to find new ways to enhance our patient care. And from my point of view and those of my colleagues, DHCP is one of the best bargains that the VA has ever had.

I need to look no farther than a university teaching hospital with which I am familiar. This hospital has three separate systems operating on three separate mainframes to handle their applications. The staffing to keep these mainframe systems running is 130. The VA medical center at Gainesville with similar workloads is doing the same job with 10 people, and only a fraction of the ADP equipment that's present in the university hospital.

I think we've come too far, we have too much of an investment in manhours that have already been spent by our commitment and in the commitment of our people to turn back now. If we are unable to proceed with the orderly and measured completion of the DHCP system, the VA system will be severely wrenched. We've come out of the quill pen era finally.

And it would not only seriously compromise our ability to function as a modern, competent, effective health care system if we turn back now, but it would also be devastating to the morale of the thousands of VA people who have invested of themselves in training and acquiring the knowledge needed to operate this system. These people who have been denied for so many years any kind of ADP capability, see the DHCP approach as a beacon light which has really led them out of the wilderness. I think they would be devastated if we turn back now.

Mr. **Gray**. Thank you, Mr. Randall. Mr. Fears, we're doubly delighted to see you since you're from my home state. You may proceed.

STATEMENT OF JOHN FEARS

Mr. **Fears**. Thank you, sir. I'm pleased to be here today to testify with Mr. Randall who is the oldest Director in the VA system about the status of the computers in the VA today. I told Malcolm I was going to say that so it will be in the record.

Three or 4 years ago I had the pleasure to be here—or I had the pleasure to testify before you about the lack of computer systems in the VA and my concerns as a Director about this deficiency. So I'm proud to be here today to talk to you about the tremendous progress that I think we have made in the system.

I think that I'm uniquely qualified to talk about this because as Director of Hines VAMC, which is one of the largest hospitals in the system, we have had vendor supplied software. I have dealt with centrally developed software, and I have dealt with the DHCP developed software.

I'd like to break my comments down into three basic categories. First I'd like to talk a little bit about each of the programs that we have at Hines and what the status of those programs are. I'd like to talk a little bit about some of the innovative management systems and innovative programs that we have produced because of DHCP. And then I'd like to talk a little bit about what the impact would be if we were to have to change the system in midstream.

Hines Hospital currently has the medical administrative service, the laboratory service and the pharmacy service in advanced stages of computerization. In the medical administration service we process admissions, discharge, scheduling, the patient treatment file, and a program we call HINC, which is an interface with the target system that allows us to determine immediately eligibility when a veteran comes into the hospital.

With this system we process over 260,000 applications for admission. We handle in excess of 18,000 in-patient, and we are processing 260,000 out-patients a year with the system.

In the pharmacy, our out-patient pharmacy and the in-patient IV additive programs are fully operational, and we're currently building files and testing the in-patient programs for immediate implementation. Our pharmacy fills over 612,000 prescriptions a year using this system.

In the laboratory, all areas of the laboratory, chemistry, hematology, biomicrobiology and pathology are fully computerized. We're now working on the cutting edge, state-of-the-art type programs which will enhance the quality and the cost-effectiveness of our patient care.

I'd like to state that Dr. Ginsburg who is sitting to my left is one of the prime developers of two of the programs which we have at Hines which we have found to be outstanding and have been tremendously beneficial. We currently process over 4.5 million tests a year completely automatically using the DHCP system.

Dietetics, the dental program, radiology, the integrated finance supply package, mental health, nursing, social work, and surgery packages are currently up in a test mode and are available as soon as we can get some additional hardware to put them up. And I would dare say that if we had the hardware up, we could get all of these programs up within a 3 to 4 to 5-month period. Those programs, as I say, will be available just as soon as the hardware becomes available.

I mentioned before some of the new things that we're doing in the laboratory and I'd like to give you an example of a new and exciting initiative that would never have come about if it weren't for DHCP. We're currently working on a joint initiative with the Great Lakes Naval Station to provide all the blood and blood products that each of our respective hospital needs at a cost savings of well over $500,000 a year.

Great Lakes would collect their blood through their donor program. Hines would test and type the blood, giving availability information back to Great Lakes through a direct computer link which can be established very quickly. The blood will then be allocated through existing hematology capabilities, and the Navy's capability to obtain blood for the benefit of both parties.

None of this would have been possible if it hadn't been for Dr. Ginsburg's program which allows us to immediately interface with them. The program has the capacity to manage the inventory, prevent transfusion errors. It allows for tracking of the AIDS antibody. It monitors for appropriateness of transfusion. And it gives us all our workload statistics and provides all of our quality assurance monitors.

Before I talk about the second initiative that we have, I would like to clear up a misconception that I think you gentlemen might have been given about DHCP previously. It has been referred to as a non-integrated system. DHCP is the epitome of an integrated system. How can you be more integrated than to run all of your programs on a single system using a single language? It just is an integrated program by its very definition. There are interfaces between all of the programs within the same computer system, and DHCP gives us the capability of adding more interfaces very simply, if they're needed.

I'd like to say as an aside, that we also have 24-hour a day support for a system that supports a hospital as large as Hines. To say otherwise, I think, is foolish.

The second initiative that I was going to talk about is an integrated management information that we call decentralized medical management information. In its simplest form, this system allows us to track the resources needed to treat our patients. It provides cost information for these resources, allowing us to determine precisely the amount it cost us to treat the patient. And then it compares this with what resources should be used to treat that patient. This allows immediate feedback to our doctors to ensure that they are practicing medicine in a cost-effective, qualitative manner.

We have had visitors at Hines from England, New Zealand, Finland, Japan, Sweden, and Australia—and I might say, McDonnell-

Douglas—to look at this state-of-the-art system. New Zealand and Great Britain are currently testing the system for possible use in their medical systems.

The last area I stated I would like to cover is what would happen if we had to start over with a new system. A few words that have been given to me and that come to mind are disappointment, frustration, delay, unnecessary expense, and a loss of a sense of accomplishment. I sincerely believe that our efforts have produced an excellent product with the resources we had available. No one could have done a better job.

If we start over, we will not have as good a product as we have today. Five years from now, the cost in wasted resources alone would be tremendous.

Thank you.

M. **Gray.** Thank you, gentlemen, for some very valuable testimony. I have a couple of quick questions before I yield to my colleagues.

Mr. Fears, you mentioned DMMS in your testimony on reimbursement models. Could you give us a little explanation of how DMMS would affect reimbursement?

Mr. **Fears.** I think it would positively affect reimbursement. Right now we're working with a system, the DRG system that is rather arbitrary in the way it reimburses for patient care. With a system like DMMS you could tell exactly what it cost to treat a patient and you could come up with a much more appropriate reimbursement model.

Mr. **Gray.** I'm glad you characterized the DHCP system as integrated. And I had one question here for Dr. Ginsburg on the same subject. Do you also, Doctor, consider the system to be integrated?

Dr. **Ginsburg.** Highly integrated.

Mr. **Gray.** The gentleman from New York, Mr. Solomon.

Mr. **Solomon.** Gentlemen, let me first of all thank all of you for taking the time to come here today. Your testimony certainly has been compelling. Let me be parochial also like our acting chairman here and particularly thank Dr. Ginsburg who comes from the Albany VA medical facility up in my area.

I would also, Mr. Chairman, like to submit for the record a letter which I have from Dr. Ginsburg to me that states in substantial detail just how efficient the present DHCP system is in helping to deliver medical care to our veterans, if I might do that.

Mr. **Gray.** Without objection, the letter will be inserted at this point in the record.

[The information referred to appears at p. 259.]

Mr. **Solomon.** Let me also ask a question of Mr. Randall. And by the way, I guess your credibility goes without saying, too. If you're the oldest Director of 172 hospitals throughout this Nation, certainly you know from where you speak, Mr. Randall.

Mr. **Randall.** Mr. Solomon, that's really a myth. I'm one of the younger Directors.

[Laughter.]

Mr. **Gray.** That's the oldest in experience, not age.

Mr. **Solomon.** You sound like our acting chairman here. But somebody just mentioned to me a little while ago that somebody from the Appropriations Committee staff had been in your hospital in Florida several months ago. Did you have an opportunity to speak to them and impart this same information to them at that time?

Mr. RANDALL. Yes, I did.

Mr. SOLOMON. How long ago was that, do you recall? Just offhand.

Mr. RANDALL. Approximately 2 months ago, I believe.

Mr. SOLOMON. Dr. Ginsburg, Dr. Schafer earlier talked about the COBOL language and was comparing that to the MUMPS system. What is the difference between them, as far as you're concerned?

Dr. GINSBURG. Let me just give a quick simple example. Right now we have a field which is the veterans Social Security number, and I think you can have up to 10. If, let's say, the Social Security number changed to 15 digits, in the MUMPS programming language you can just say, now this field can have 15 characters without impacting at all on the existing patient information and on the data base. The way I understand COBOL is, you'd have to almost recompile the whole data base, you'd almost have to redo the whole thing, and it would not be a simple matter at all.

Therefore, it's a very rigid, very inflexible language and it doesn't allow the kind of information changes we need to put in a very dynamic hospital system, whereas MUMPS has that capability.

Mr. SOLOMON. One of you gentlemen mentioned that there was a computer terminal in each ward in the hospital. Was that you, Mr. Randall?

Mr. RANDALL. Yes, sir.

Mr. SOLOMON. You have those available all throughout the hospital?

Mr. RANDALL. Yes, sir.

Mr. SOLOMON. Where any doctor or——

Mr. RANDALL. Yes, sir, it can be accessed by any physician or nurse on the ward.

Mr. SOLOMON. Dr. Fletcher also testified earlier on his pacemaker surveillance program that he had developed and the fact that it had cost nothing. And, Mr. Fears, I think you mentioned two medical programs that were developed by Dr. Ginsburg that were being used in your hospital, not in Albany where Dr. Ginsburg comes from but in your hospital in Illinois.

May I ask you, Dr. Ginsburg, how did you go—where did you find time to develop programs, and how much did they cost?

Dr. GINSBURG. A lot of unhappiness on my wife's part, I'm afraid, because I did a lot of this nights and weekends on my own time because I felt the need for these programs, and I kind of felt it would be an important item to do.

I think I'm trying to accomplish the same sort of thing that Dr. Fletcher has been doing, except I think I might have been at it a little bit longer. I started back in 1979–80.

Mr. SOLOMON. That's just outstanding. Let me just ask you the question then. What improvements or equipment are needed for the DHCP that VA doesn't now have? In other words, if we had money to spend, rather than spending it on a new system, how would we spend it in your opinion? How could we better that system?

Dr. GINSBURG. I would rather direct that question to Mr. Cox and the head of MIRMO because I really don't feel qualified, except to say that more terminals and more computer hardware to run the software that we have on the shelf waiting to be run now.

I can give you two instances of physicians wanting to use the terminals on the wards both at Hines and at, I think I should mention, Washington, D.C. Sometimes when the physicians can't get to the terminals at Hines, they run down to the laboratory to use one of their terminals to look up lab results. And there will be a lab tech standing right nearby and they won't bother them, they'd rather look it up themselves.

So more terminals, more printers, and more hardware to run existing software just waiting to be run.

Mr. SOLOMON. Mr. Chairman, just based on the testimony from this panel, like other panels, I just get the feeling that the in-house system that we have and the people that are working on it like Dr. Fletcher, like Dr. Ginsburg and others, there just seems to be a great amount of esprit de corps out there that we just couldn't have if we had an outside system.

I just think it's outstanding, and I really take my hat off to all of these people. And again, we really appreciate your coming before our committee.

Mr. GRAY. I thank my friend from New York. I yield to our distinguished friend from Georgia, Dr. Rowland.

Dr. ROWLAND OF GEORGIA. Thank you very much, Mr. Chairman. Dr. Ginsburg, I was really intrigued by what you were saying earlier about the spinal cord tumor and the ability that you had to quickly retrieve information that's so important for pathologists, and radiologists, too, to have access to clinical material and past history in order to make a diagnosis that would be in the best interest of the patient. And you did that so quickly.

I recall when I was practicing medicine, we just didn't have that kind of capability, that you were able to determine whether or not that was a metastasized lesion and let the surgeon know so he would know how to proceed to treat the patient. So that's just really outstanding.

And the gentleman from New York asked, how could you improve. I don't know how you can improve on that. That's just about as good as you can get. And I just wanted to comment on that and commend you and the other people who have put in time on their own to develop the programs and make this system the highly sophisticated system that it really is.

Let me ask Mr. Fears, you mentioned something a few minutes ago about having access over a 24-hour period to the information. Could you expand on that a little bit, because earlier we were talking about 24-hour, 7-day coverage and the difference in cost. And I wonder if you could tell me a little bit more about what you were saying.

Mr. FEARS. Basically I think that there was some misinformation that was given that we don't have computer support in the hospital 24 hours a day. And I just wanted to set the record straight that that's not correct. That at Hines, it's a 24-hour a day, 7-day a week operation, and we have computer support there to keep the lab system working and the MAS system working and so forth around the clock.

Dr. ROWLAND OF GEORGIA. Well, in that case then, the comparisons that were made were really not valid that we heard earlier. A proposal was made by McDonnell-Douglas for ,24-hour, 7-day a week and the information that was given to us from the study was not based on that. But that's really not correct then, is it?

Mr. FEARS. It's not correct at Hines.

Dr. ROWLAND OF GEORGIA. I think that's an important point there that we were talking about earlier, that seemed to offset—we were talking about facilities.

Mr. FEARS. Very important.

Dr. ROWLAND OF GEORGIA. Thank you very much for clarifying that, Mr. Fears.

One other question that I have, Mr. Randall. You mentioned earlier about having some knowledge in the private sector. I believe you mentioned three places that you had some knowledge about in the private sector. How do the VA needs in your functional area differ from those in the private sector?

Mr. RANDALL. They really don't differ at all. The major difference is in the detail of bills that are rendered. But clinical applications and collection of medical data is essentially the same. And the university hospital I was talking about, the 130 people it takes to operate that system, those are not billing people, those are computer people that are operating that system.

Dr. ROWLAND OF GEORGIA. I see. I take it then that everyone sitting at that table is very satisfied with the DHCP system that's in place now.

Mr. RANDALL. Absolutely. All we need is additional hardware, Dr. Rowland.

Dr. ROWLAND OF GEORGIA. All you agreed on—the additional hardware has already been mentioned. Would all of you say that—what would be the effect of replacing the system with a totally new system by a commercial vendor? I suppose all of you might be of the same opinion. Would one of you state that opinion?

Mr. RANDALL. I think it would devastating to go back now and to start all over again, particularly for VA people. As I mentioned, for years they were denied any ADP capability. And at long last now we are able to get some capability. And I think you've heard indications of the enthusiasm of the VA people. They're working weekends, nights. They're involved in making this system work.

And to now when they see the light at the end of the tunnel, to start all over again, I think would just be devastating to morale.

Dr. ROWLAND OF GEORGIA. Mr. Fears, Dr. Ginsburg, you agree with that?

Dr. GINSBURG. I'd like to answer that question you just asked. And that is, I have a suggestion for the vendors. And that is, not too many years ago there was a computer expert named James Martin who wrote a book on application development by non-programmers, by the users. We've seen this many, many times,.we've heard this a lot today.

And what I feel is that the vendors should do is concentrating on providing us with the tools we need to go on to do our in-house development. The users are going to be the ones that do the application development, as James Martin pointed out several years ago and the VA had already been doing when his book came out. And that's where, I think, we should be directing our energies.

Mr. **Fears**. If the vendor could come into my hospital and show that for the same cost he could give me a better product, I would look into it and would accept it immediately. That has not been done. And I think because it hasn't been done, you're going to have less user satisfaction should you change, and I agree with Mr. Randall that it would be devastating.

Dr. **Rowland of Georgia**. Thank all of you very much. Thank you, Mr. Chairman.

Mr. **Gray**. Thank you, my friend. I now yield to my friend from Florida, Mr. Bilirakis.

Mr. **Bilirakis**. Thank you, Mr. Chairman. I certainly would like to welcome all three of these gentlemen, but particularly Mr. Randall, a long-time friend who is not only Director of the center in Gainesville but the regional Director—I guess that's the proper title of——

Mr. **Randall**. Medical District Director.

Mr. **Bilirakis**.—the medical district down there. He is District Director. And he has always been there when I've called upon him. We've been involved together in a number of Congressional hearings and town meetings in Florida. I appreciate all your work for our veterans, Malcolm.

I would ask you, sir, you mentioned about 2 months ago that there were members of the Appropriations Committee staff who visited the Gainesville center. Do you know of any instances of visits to other hospitals in Florida?

Mr. **Randall**. I think that one of the members—there were several members of the staff that visited Gainesville. One of them went on to visit Tampa and spent a few hours at Tampa.

Mr. **Bilirakis**. That is the Haley hospital. Who did these people talk to? Did they first come to you and get permission, in effect, to go around the hospital, or how did that work out?

Mr. **Randall**. Well, it started when one of the staff members visited Gainesville and we started talking about the DHCP system, and this individual expressed some concern about further funding for the DHCP system. And my immediate reaction was that I thought that was a mistake.

And I then got together our ADP people and a couple of our other staff members who are deeply involved in DHCP, and we explained all the applications and what a solid system we thought it was. This individual then asked if a couple of other staff members could come to Gainesville and have us tell them what we had told this staff member. And I said, of course, we'd be delighted.

So the other two staffers who came talked to the same people and we told them essentially the same story.

Mr. **Bilirakis**. Could anyone have given them a negative story, so to speak?

Mr. **Randall**. Not at our hospital. I have talked with everyone who talked with the individuals and said, by any stretch of the imagination did any of you say anything that would indicate——

Mr. **Bilirakis**. And they weren't precluded from saying what they felt, were they?

Mr. **Randall.** Of course not, no, sir.

Mr. **Bilirakis.** In any way whatsoever?

Mr. **Randall.** Of course not.

Mr. **Bilirakis.** Would you say, Malcolm, that your opinion, your conclusions regarding the DHCP system reflects the opinions of all of the veterans medical center personnel in Florida?

Mr. **Randall.** Yes, sir.

Mr. **Bilirakis.** Good.

Mr. **Randall.** In fact, there are a number of people here from Florida testifying today as you noticed.

Mr. **Bilirakis.** Right.

Mr. **Randall.** Florida leads all the rest, Mr. Congressman, in people dedicated to applying the DHCP system.

Mr. **Bilirakis.** And we commend you for that, sir.

Mr. **Fears.** Reverse snowbird.

Mr. **Bilirakis.** That's another story we still have to talk about. I have a brother who's in the hospital in Pittsburgh and he told me that he's the only one—I hope I don't get him into trouble with his personnel up there—but he's the only one in the ward, a 16-person ward up there, and only a handful on the entire floor. And they're standing in line down in Florida to get in. So we've got to talk about those things.

In any case, I don't think I should take any more time now, Mr. Chairman. I appreciate you gentlemen coming.

Mr. **Gray.** Thank you, gentlemen, very much for coming up today. We appreciate it.

For the benefit of the members, we have two additional panels made up of seven distinguished witnesses, and we'll now call on panel number three, Julie Catellier, VA Medical Center, Tampa, Florida; Conrad Raber, Chief, Medical Administration, VA Medical Center, Durham, North Carolina; Mary Jane Lewis, Chief of Pharmacy, VA Medical Center, Bay Pines, Florida; and Lynette Roff, Chief of Dietetics, VA Medical Center, Tampa, Florida.

I believe we would have been better off to have held this hearing in Florida.

Dr. **Rowland of Georgia.** Mr. Chairman, let me ask you something. Are all these Florida people here because they're getting 5,000 new veterans a month in Florida?

Mr. **Gray.** That's it. I'm sorry Dan Mica is not here to echo Congressman Bilirakis on that. We hear that every time, both from the left and the right.

We're delighted to see all of you, appreciate so much you coming. Did I immasculate that name, Catellier?

Ms. **Catellier.** You did a wonderful job.

Mr. **Gray.** Good, we'll let you proceed. Do any of you have prepared statements you'd like to submit for the record?

[Shaking heads negatively.]

Mr. **Gray.** Just proceed in your own fashion and tell the committee whatever is on your mind.

STATEMENTS OF JULIE CATELLIER, R.N., VA MEDICAL CENTER, TAMPA, FLORIDA; CONRAD RABER, CHIEF, MEDICAL ADMINISTRATION, VA MEDICAL CENTER, DURHAM, NORTH CAROLINA; MARY JANE LEWIS, CHIEF OF PHARMACY, VA MEDICAL CENTER, BAY PINES, FLORIDA; AND LYNETTE ROFF, CHIEF OF DIETETICS, VA MEDICAL CENTER, TAMPA, FLORIDA

STATEMENT OF JULIE CATELLIER

Ms. CATELLIER. Thank you, Mr. Chairman. I'm Julie Catellier. I'd like to start by expressing my gratitude for being invited here today to talk about this most important issue.

I am the clinical applications coordinator at the James A. Haley Veterans Hospital in Tampa, Florida. I'm the hospital-wide facilitator for all aspects of clinical applications, including supervision of all training of physicians, residents, medical students and other clinical staff.

I'd like to share a recent experience with you. One of my tougher clinical recruits to the DHCP is a nurse of 31 years who didn't see any need to change from doing things the old way. Last week I was walking through her area in the hospital and I saw her going to town on a computer keyboard. I stopped, startled and jokingly said, do my eyes deceive me. And she replied, Julie, I said I was resistent, not stupid.

[Laughter.]

Ms. CATELLIER. Why it is that even those clinical personnel who are most resistent to change have come around to DHCP? It's because we have the best.

At the James A. Haley Veterans Hospital we have 651 beds. We are an affiliated medical center. We have a 120-bed nursing home, and we have two out-patient facilities. One in Orlando located 90 miles away, and one in Pasco County located about 40 miles away from our hospital. We are strongly commited to automation and we currently support applications in medical administration service, lab, pharmacy, dental, dietetics, fiscal, consult tracking, mental health, radiology, social work, surgery and rehab medicine.

Our software runs on eight Digital 1144 CPUs. We have 400 terminals and 200 printers distributed throughout our hospital shared by approximately 2,000 full-time and part-time employees. Included in this number are 250 physicians and 600 nurses.

I'm a nurse by profession. I worked in direct patient care for 6 years before I took this position, and I've been in this position for 1 year. I work with clinical staff on a daily basis in all aspects of clinical applications.

What I'd like to do today is to share with you some ways in which the DHCP impacts on the work of clinical staff. Those persons providing the direct care to our veteran patients. In any clinical setting a critical issue is availability of information on which to make decisions and take actions. This has been one of the most dramatic benefits of the DHCP.

Patient demographic and diagnostic information is readily available to clinicians. The need to search for hard copies or to wait for a telephone report no longer exists. There are significantly fewer lost test results, and this results in a marked reduction of the number of repeated tests and exams. Discomfort and inconvenience to our patients is minimized, and an overall benefit of increased timely care is evidenced.

Physician section chiefs tell me that their staff devote at least 20 percent more time to direct patient care since DHCP. My head nurses tell me that an average of two hours per day per nurse is saved on things like telephone calls and other interruptions that now gets devoted to direct patient care.

I'd like to say that although DHCP has allowed for more efficient, cost-effective care, this is most definitely not limited to a dollars and sense issue for clinical staff. The DHCP represents an investment in time, energy, knowledge and commitment by VA clinicians. This is a system designed by and for VA employees, and a sense of ownership and pride exists regarding its maturity and success.

Features unique to this clinical support system most often cited as exceptional include the use of common sense, easily understandable language, and the ease of learning the system. Each of our users goes through a two-hour overview class and leaves the class able to work independently on the ward to provide patient care. We use electronic mailman, and our users love that.

We have system mobility. Any VA employee can go into any VA hospital in this country and know what to do on that computer system. But paramount is the fact that DHCP applications can be tailored to meet the changing needs and experiences within the VA health care system, which accounts for both its popularity and success among clinicians. After all, the essence of health care is that it's dynamic and constantly changes according to new findings.

Stopping DHCP at this point would represent a betrayal to thousands of VA employees who have made a considerable commitment to computerization, both in terms of time devoted to learning the system and actual work involved with change and adaptation inherent to automation. To me, Mr. Chairman, this is a condemnation of efforts by a lot of people who have worked very hard to make DHCP a success story.

In a bureaucratic environment where grass roots workers find little to identify with on a personal level, DHCP has provided an opportunity to speak out, creat and effect change. To further delay hardware expansion and planned DHCP enhancements would be destructive to highly motivated VA clinicians, and will undoubtedly impact on the delivery of the fine care we strive to provide.

Recently a resident physician approached me to express concern about the rumored demise of DHCP. He said, "If DHCP goes, it would be like removing every telephone out of this hospital." That's how much we rely on the system. It would be like going back to the dark ages.

Mr. **Gray**. Thank you for very fine testimony. Ms. Roff, we'd be delighted to hear from you if you have a statement to make.

STATEMENT OF LYNETTE ROFF

Ms. **Roff**. Thank you, Mr. Chairman, and for inviting me to speak about dietetic service and the impact of DHCP. I am the Chief Dietician of the Tampa VA hospital and I have been a SIUG member for the last 4 years. As part of the SIUG we have developed a preliminary report on the impact of DHCP which I will provide here.

We have all phases of the dietetic program running in Tampa, and we are proud to say that we are the development site for all future packages. We have eight CRTs and two printers in our service, and 30 percent of our employees are users right now as of today. If I could quote a chief dietician who is very well respected and just retired from the VA, she said, "DHCP has been the best thing that's happened to dietetic service since sliced bread."

[Laughter.]

Ms. Roff. I would have to agree with her, and so would every dietician out in the country that has been involved with this process. We as dieticians have had a part. We have worked in developing the program with the computer programmer, and it has given us an opportunity to examine ourselves and to set some standards of care that are uniform throughout the country.

The program is integrated with DHCP programs, MAS and through mailman systems. Our service no longer operates in a vacuum, waiting and being dependent on other people, and sometimes being the last ones to be notified of a patient change.

In our hospital, DHCP and the dietetic modules have provided three main things. Timeliness of patient information that is more accurate and more up to date; more cost-effective management for our services; and finally, a much, much improved work environment for our employees.

We have more accurate information. Our dieticians now can readily respond to the clinical and nutritional needs of the patient. They are no longer hunting the patient down trying to find out the status of their meals, the status of their nutritional care. We have less mix-up and less delays and our patients are happier because they haven't been sitting and waiting since admission for a diet, or are waiting for their meals to catch them because they were transferred from one ward to another.

We have nutrient analysis programs that enable us to identify nutrient deficiencies in a patient's diet. Using these we can also give patients immediate follow-up and help them teach new nutritional care and behaviors.

We have reduced handling of orders. We no longer have to go through five steps to process a diet order. We have decreased the time that it takes to do such things by half. We have less food waste. In 12 dietetic services that we studied, there was an 18 percent reduction in wasted trays due to poor information. That equated in those hospitals to an average of $13,000 alone per year just in food costs.

We can track workload. Through a consult management program dieticians can rapidly respond to consults from the doctors. This helps us to evaluate the quality of care we're giving, to evaluate the performance of the dieticians, and to work in making the best scheduling system possible.

And finally our employees. Our GS-3 and GS-4 diet clerks who were very burned out are now part of a system. They are motivated. They have had input. They have been able to help make change. One 62-year-old food service worker in a hospital said, now

I have a skill and I am going back to school. And that woman is going to school in computers.

All I can say is that loss of DHCP would be devastating to the morale and to the progress that we've made. Thank you.

Mr. **Gray**. Thank you, Ms. Roff. Ms. Lewis, we'd be delighted to hear from you now.

STATEMENT OF MARY JANE LEWIS

Ms. **Lewis**. Thank you, sir. Mary Jane Lewis from Bay Pines, Florida. Our hospital has one of the largest pharmacy services that is available in the VA system today. We do serve the entire state of Florida from either staff or fee perspective.

When I first went to Bay Pines, the pharmacy there being one of the biggest, and especially during the season, which is during the winter, we were behind some 23,000 prescriptions, I believe, in trying to meet the needs of the patients. We started the computer system in order to survive, because we did not have the staff nor the other resources necessary to meet our workload in a timely fashion.

We made a few mistakes along the way, but we were all determined we were going to make a go of it, and that we did. Today we stay current even though our workload continues to grow, our employee level certainly has not maintained what we've had in the past. And because of the computers, that's the major reason that we've been able to stay current.

Our in-patient packages—in order not to repeat what Lynn and all have said about the in-patient packages—I think we are totally integrated. The system does allow 24-hour timely service. If a patient walks into our facility from anywhere in this country, one telephone call is all that's necessary to find what the patient is on, what his primary problem may be, and we can begin treating him even though we don't have the patient records.

We are able to utilize from our Fort Myers clinic the information when a patient is transferred into our facility, gives us a tremendous array of information that we did not have in the past. I do not think we could survive in this day and time without our current computer system.

Thank you.

Mr. **Gray**. Thank you, Ms. Lewis. Mr. Raber, we'd be delighted to hear from you.

STATEMENT OF CONRAD RABER

Mr. **Raber**. Thank you, Mr. Chairman. My name is Conrad Raber, I'm the chief of medical administration from the Durham hospital. I also serve as chairman of the Medical Administration Special Interest Users Group.

In the over 9½ years that I've been in Durham, I have been involved in two computer installations. When I arrived I was involved with the original installation of the Honeywell 716 system. That system ran at that facility approximately 7 years. During the past 3 to 3½ years I've been involved with the design and implementation of the DHCP.

Medical center environments are very dynamic, demanding and evolving because of the nature of health care delivery in this country. In order to have successful automation in this type of an environment, the system must be responsive to change, flexibility is a necessity in order to accommodate the diversity that is found in our medical system. In addition to that, we need the ability to get at data for various management purposes.

In comparing my experience with the Honeywell 716 system, basically it was designed to specifications. Any software changes that we requested cost thousands of dollars and took anywhere from 1 to 2 years, if they ever occurred, and data could not be extracted. If we wanted to get at certain data fields that existed within this system, we could not do this unless we hired a full-time programmer to extract this information.

Conversely, DHCP evolves—has evolved to meet the medical needs of the population that we serve. It provides for data extraction locally. It is responsive to change. And as we develop it, any errors that are caught are caught early enough that they can be changed before they're exported to all facilities.

Examples of successes in DHCP, with the passage of Public Law 99-272 requiring the means testing of veterans and third-party reimbursement, it was handled in terms of software development in two phases. The first phase, which was in production in the Durham test site on July 1, 1986, included the identification of patients needing means tests, the ability to means test out-patients, and the ability to complete means test on registration or admission. This version was distributed by September of 1986.

Phase two, which was distributed in the end of March and the beginning of April this year provides for the mandated reporting of patients by means test categories, dependents and income levels. It also provides for the tracking of means test charges, third-party reimbursement tracking, and outputs that assist in billing, which include means test charges and dates of care.

It's imperative to understand how complicated the tracking of those means test charges are and to try to have a GS-4 or GS-5 clerk interpret those and then apply them is almost asking more than that person is capable of. Now they don't have to do it with this newest version. In addition to this, the new application for medical care, a new financial statement, a third-party reimbursement form also were developed. DHCP has made this particular legislation understandable to the average clerk.

Other examples involving the VA's File Manager, which basically provides for data extraction for non-programmers such as myself. In one example, at a particular VA a distraught veteran was going to kill himself. All that the VA had was the first name and the city that the veteran resided in and that he had spent 1 day on a detoxification unit. Through File Manager, the patient was identified, a relative was notified, and a potential suicide was averted.

In another case, a veteran held police at bay from a house with a gun. The local VA identified the patient based on the street name. Subsequently the police were notified and provided with information regarding this particular patient, and the police were able to talk the veteran out of the house.

Less dramatic examples, one VA medical center completes its hospital association surveys twice per year without ever pulling a paper record. It also does analysis of specialized treatment programs which include length of stay data, diagnoses, number of discharges, place of disposition, readmission rate, et cetera.

The common data base that DHCP uses, specifically the patient file, provides many efficiencies without the need of the paper record. Certain data is available to those with a need to know. VA medical centers with satellite clinics now share common information facilitating health care delivery. Information is now shared through computers which are geographically close.

Another benefit of DHCP has been the standardization of statistical collection. In addition to that, the transparency of the statistical collection. No longer do the individual facilities have to make interpretations about specifically what is an application for care.

Additionally, DHCP provides for data validation activities that in the past would have been next to impossible. In terms of integration in the system and future development, we currently are working in medical administration with pharmacy service and fiscal service to develop an integrated fee program which will allow us to process claims for local pharmacies for certain veterans. Medical administration receives the claims, pharmacy accepts or rejects the particular medications ordered, and fiscal processes them for payment to the local pharmacies.

Other examples are the DVB and DM&S interchange between our HINQ and the target system. The innovations that have been developed by thousands of DM&S employees are the things which drive this particular system. Vendor produced software, in my experience, does not seem to foster nor accommodate this. One ISC recently distributed standardized print templates. These do not affect core programs but do help in the delivery of health care.

The loss of DHCP, simply stated, would mean that the veterans will suffer. Any change would require retraining tens of thousands of employees, medical and administrative staff depend on DHCP on a daily basis. Motivation for innovation in veteran health care delivery would decrease due to routine contracting practices.

In summary, responsiveness and flexibility are the cornerstones on which DHCP are based. The ISCs, the special interest users groups and the employees of DM&S have improved veteran health care delivery. DHCP has eased clerical tasks, for example, by the means test or third-party reimbursement. This allows better support to health care, nurses and doctors. DM&S is motivated to refine, improve and enhance software through innovation.

Thank you for your time.

Mr. GRAY. I want to thank all four of you for very outstanding, concise, right to the point statements. You're a great credit to the Veterans' Administration.

And I'll forego my questioning at this time out of deference, since this is primarily a Florida delegation, to my friend from Florida, Mr. Bilirakis.

Mr. BILIRAKIS. And I might add for my three neighbors there, that I've got to leave now because there's an offshore drilling conference with Secretary Hodel in terms of the drilling off of the west coast of Florida as well as other parts. So I'm going to have to run over there, too. That's the story of our life up here, run.

But I welcome the entire panel, of course, and thank you all and particularly welcome Ms. Catellier, Ms. Lewis, and Ms. Roff for coming here today.

Mary Jane, you've been to Saginaw, haven't you?

Ms. LEWIS. Yes, sir.

Mr. BILIRAKIS. Do you have any opinions on—you've seen the test system at work there?

Ms. LEWIS. Yes, sir. I went to Saginaw early in the development stage of the computer program, and specifically geared toward looking at the pharmacy package. My opinion was they had taken a basic order entry process, and with the help of the VA people at Saginaw, had continued its development. But our people in Saginaw had an awful lot to do with the development of that package to get it where it is today.

Mr. BILIRAKIS. Would you have enough knowledge, shall we say, in the area, in the computer area to be able to compare the two systems? The one that you use against the one at Saginaw.

Ms. LEWIS. As far as functionality is concerned?

Mr. BILIRAKIS. Well, as far as, let's say, the use that you—the employees in the pharmacy there at Bay Pines. In other words, how do you feel that the people would react to a change? And how do you find the current in terms of quality and efficiency and what-not? Do you have enough knowledge to comment?

Ms. LEWIS. No, sir, not really about the package in its fully developed stage at Saginaw. I really couldn't compare them.

Mr. BILIRAKIS. Mr. Chairman, I said it earlier this morning, if it ain't broke don't fix it. And I guess we've all sat in hundreds and hundreds of Congressional hearings up here and I think is probably the most one-sided one that I've ever sat in on.

And without belittling the quality of the McDonnell-Douglas system—and I'm certainly not doing that. I'm not competent to do that. We've heard from the nursing sector, the dietician sector, from the pharmacy sector, medical administration, the administration in general, cardiology, laboratory services. We can go on and on and on. And the staff tells me—in fact they've shared with me here the number of telephone calls, the poll, the informal poll that they've taken all around the country. And we just can't seem to find anybody that thinks it's a bad system.

And I frankly raise the question, what in the hell are we doing here? Without trying to be unfair, as I say, to McDonnell-Douglas or any of the other computer companies, I'm just not really sure what we are doing here. Maybe it takes some——

Mr. GRAY. It's called the Appropriations Committee.

Mr. BILIRAKIS. Well, I don't think I have anything more to add than that. It's just that I came in here, I think, with an open mind. But you can't just toss aside the avalanche of testimony that we've heard here today and the information we get from the staffs on both sides of the aisle, if you will, and what-not.

I'm very grateful, of course, for this type of a hearing. Maybe that's why we're here because we've got to hear these things. But I just wonder why in the world it was necessary in the first place under the circumstances.

But it's really nice to see these three young people up here who have risen to great heights in the Veterans' Administration system, and I'm very proud of you and proud to be serving you. Thanks a lot.

Thank you, Mr. Chairman.

Mr. GRAY. Thank my friend from Florida. I yield to my distinguished friend from Georgia, Dr. Rowland.

Dr. ROWLAND OF GEORGIA. Thank you, Mr. Chairman. I don't have any questions. I just want to——

Mr. GRAY. No comments about all that——

Dr. ROWLAND OF GEORGIA. Yes, I'm going to make a comment, Mr. Chairman, if you'll give me time. Just to thank all of you for being here, and to also say that it certainly has been a one-sided type testimony that we've heard today, all in favor of DHCP.

And I don't think that that means that there's any criticism at all of the other systems in the three hospitals that are being looked at now. I certainly don't criticize McDonnell-Douglas or the other two. I'm sure that their systems are very good also, but it just so happens we've already got a good system in place apparently, and we just don't need to be tinkering with it.

Thank you.

Mr. GRAY. I thank my friend. Thank you all so much for coming. You've been very helpful, and as I said earlier, you're a great credit to the Veterans' Administration. Thank you very much.

We'll now be delighted to hear from our last panel, maybe get a little different complexion. Panel number four, made up of Mr. Kelly Carpenter, Chief, Medical Administration, VA Medical Center, Saginaw, Michigan; Ms. Lida Boland, Assistant Chief, Medical Administration, VA Medical Center, Big Spring, Texas; and Mr. Emanuel Joseph Donati, Chief of Pharmacy, VA Medical Center, Philadelphia, Pennsylvania. We're delighted to see you folks here and deeply appreciate you coming.

We understand that you're to testify primarily on IHS, and we'll just toss the coin as to who would like to go first.

STATEMENTS OF KELLY CARPENTER, CHIEF MEDICAL ADMINISTRATION, VA MEDICAL CENTER, SAGINAW, MICHIGAN; LIDA BOLAND, ASSISTANT CHIEF, MEDICAL ADMINISTRATION, VA MEDICAL CENTER, BIG SPRING, TEXAS; AND EMANUEL JOSEPH DONATI, CHIEF OF PHARMACY, VA MEDICAL CENTER, PHILADELPHIA, PENNSYLVANIA

STATEMENT OF EMANUEL JOSEPH DONATI

Mr. DONATI. I can go first. I'm Joe Donati. I'm the Chief Pharmacist at the VA hospital in Philadelphia, and I want to thank you for having me here to speak today.

I can speak specifically about the pharmacy system at the VA hospital in Philadelphia. All our equipment was installed last September. Any problems we had with the equipment were resolved in a timely manner by the company that we've been dealing with, which is Shared Medical Systems.

The software package for the in-patient pharmacy has been installed and has been in operation since the fall. The out-patient pharmacy system was brought up in November of last year. Although we felt we weren't ready, we felt compelled and to try to use the system in order to meet the contractual agreements. We brought it up in a timely manner.

After trying to use the out-patient package we found that the system was slow in some respects and also needed some tailoring. So we de-installed our out-patient system and asked SMS to make the changes to streamline some of the functions. The changes have been completed and are now in a testing stage, and hopefully in the next 5 to 7 weeks we'll have our out-patient package up again.

It is important to understand that the VA hospital in Philadelphia, with the approval of central office, agreed to be an Alpha test site for a package that was never tried in a hospital system before. SMS had a package that had been implemented in about 70 hospitals, and seemed to be successful and would probably have met our needs.

However, we opted to be an Alpha test site. We thought that this would be a better deal and would help us enhance patient care and have state-of-the-art equipment. We knew there'd be problems, delays in schedules, frustrations, and other issues.

For example, we have a drug interaction package, and it was subcontracted—or it was bought from First Data Bank, which is a reputable company. And I guess when SMS were transferring the information, some of the information didn't get into the computer and the system was, what SMS called damaged. We talked with SMS about the problem. The problem has been corrected and now we have available a clean and complete drug file in which to work.

The system had some major impacts on the work flow of the pharmacy service. It helped us with such functions as automatic stop orders which are impossible to manage in a normal environment, and also started a system that drives the physicians to review and discount patient orders within 7 days.

Besides the drug interaction functions we have functions such as generic duplications which will alert the pharmacist, and also patient information, patient diagnosis, allergies which weren't available in the past. The information is extremely important and makes a major difference in our ability to work clinically and also administratively.

We look forward to the support of the automated inventory functions which we hope will be up probably in the middle of the summer. The inventory package will help us clinically, and improve our ability to manage. This is especially important because of the high cost of drugs and also the new types of drug therapy that are coming in the future.

I really don't have a feeling for what is going on with the DHCP system in the medical centers or the other IHS centers. No one has really encouraged any communications between the other hospitals. I don't know about the DHCP system and what it can do, but I do know that there was a tremendous effort on our part to install the system that we have now.

We like what we see and we are excited about the future and the opportunities that the system will bring. The very reasons that were stated this morning and this afternoon about bringing down the DHCP system and converting over to the IHS system would be the same reasons why we would not like to change the IHS over to the DHCP system. For the simple reason that we haven't completed the program, and it looks like it's a good comprehensive program and we'd like to see it have a chance.

Mr. GRAY. That's your existing program you're talking about?

Mr. DONATI. Yes, sir.

Again, I'd like to say that the decision makers will make the decision and we'll follow whatever decision has been made. And I'd like to thank you for allowing me to speak here today. Thank you.

Mr. GRAY. Thank you, Mr. Donati. Ms. Boland.

STATEMENT OF LIDA BOLAND

Ms. BOLAND. I'm Lida Boland from the VA medical center in Big Spring, Texas. I am the computer assistant now, but I would like to speak to you regarding my experience as the Chief of the Ambulatory Care and Processing Section of the Medical Administration Service.

At our hospital we service a veteran population of approximately 119,300 who are gathered from 53 Texas counties and one county in New Mexico. We have authorized 118 medical beds, 45 psychiatry beds, 40 nursing home care unit beds, and 46 surgery beds which are now under consideration of closure.

As one of the IHS sites our vendor, Electronic Data Systems, installed in our hospital Data General equipment. We have two separate central processing units, one of which controls the patient care functions and the other of which controls are financial system. This central processing unit can also be used as a back-up, should the need arise, for our patient care system.

We have installed in the hospital 78 terminals and 51 printers to support the patient care system. Sixteen of those printers are special use printers. To support the financial care and quality assurance package, we have 14 terminals and five printers located throughout the hospital. I would like to say that there are five laboratory instruments which have been interfaced into the patient care system.

Working primarily with medical administration modules, but also being involved as the MAS coordinator, I was closely related with each of the modules as they came on-line. And I'd like to tell you that we have 14 applications on-line at our medical center now. And I would like to go through those individually, giving you the benefits that we have derived from that system.

In the registration system we found that when we converted from the manual system to a computerized system, it took us a little longer to initially register a veteran. But we found that our records were much more legible and we had quickly retrievable information that we could update just with the press of a button.

Not only that, but we were able to look on-line and make inquiry regarding a patient's visit history, who his physician was, what his diagnosis was, what disposition was made of that patient. We have a rapid update of that data at any time. We have an automated patient data card so that we no longer have to manually key that plastic card that the veteran feels is his passport to care.

We have on-line eligibility verification. We can see at a glance whether a patient is service connected or non-service connected, in receipt of a pension, and whether or not he's an active or an inactive patient. This assists us greatly in our workload trend data and also in the reports that are required from our medical center.

We have a tickler file that tells us at any given time the eligibility or unverified status for any veteran. In addition to this, we have automated reports which are generated and supplied daily or monthly as the case may be regarding the registration, admission, and reports to ancillary services which eliminated our need to manually provide information to those services.

The admission, discharge and transfer module is very closely related to the registration module, and as such it's a little difficult to separate the benefits that we have achieved. But the ADT module gives us further information on patients who are actually admitted to the hospital, including their location in the hospital at any given time, who their physician is, what their diagnosis is, whether or not they've been transferred from one service to another, whether discharge planning has been completed and what their status is at any given time.

In addition to this we also have next of kin, emergency contact and any other demographic data that staff within the hospital might wish to access. Because we have this on-line access we have a very speedy method of replying to requests for information. This in turn provides a much better quality of patient care.

The discharge planning portion of this module allows our ancillary services to be notified if a patient has a need for discharge planning at the time he's admitted to the hospital. And should his condition change while he is in the hospital, then there's an automated updated notice sent to those services. This helps us not to delay patient discharges for non-medical reasons.

Again, we have numerous reports that are generated by this module which give us patient schedules while they're in the hospital, physician assignments so that we can track who handles the workload. This gives us much more effective utilization of our resources, and again, better patient care.

The order entry module could be lumped into one or into three separate modules, and our vendor installed it as three separate modules. We have an overall order entry which allows the people on the ward or in the out-patient area to place orders to the ancillary departments. In addition to that, there are several other areas which allow the result reporting, so that we have on-line access to what the status is of the request or the order, as well as when it has been resulted.

We have electronic signature and verification within the computer itself so that those reports can be automatically printed at the patient location. This eliminates the need to hand-carry those results.

The scheduling module provides dates and times for available clinics and ancillary services such as dental or radiology or pulmonary functions. It expedites and allows us to consolidate appointments for patients. And it also eliminates the need to pay travel and eliminates the inconvenience for patients having multiple return appointment for a condition.

We're able to block reschedule functions and move those patients in a block or singly by priority order when a clinic provider must cancel their clinic. In addition, we have automatic notices which are generated, formatted to be placed in window envelopes which eliminates the need for hand transcription of telephone calls.

Our medical record tracking module provides written notice to the file room of any inquiries or need for records. We're able to look at a glance on-line and tell you where those records are located. There's an automated interface with the scheduling modules which allows charts to be ready when the patient comes in.

Again, there are several reports that are available with each of these modules which help us in delivering patient care and utilizing our resources more effectively.

We have three pharmacy modules that are on-line, which include in-patient pharmacy, out-patient pharmacy and pharmacy inventory. As an MAS user, the only thing that I addressed within the pharmacy module was the provision of a drug profile placed in each chart without the need for manual compilation by the physician of those medications.

The advanced radiology modules provides text resulting and standard results, which reduces the amount of time required in that area. Lab orders are simplified because of the use of alphabetical help screens, and there are instrument interfaces as I have just said, which eliminate the manual keying of that data and improve the accuracy of the results.

The resource allocation module provides automated billing and eliminates the need for a manual chart search for any category C or reimbursable insurance veterans. In addition, this module provides a grouper so that we know what our diagnostic related groups are. It assists in coding diagnoses, and gives a great deal of quality assurance information not previously addressed by many individuals.

Statistical information, management reports, census verification, length of stay data, all are available through this module, allowing us to improve our quality and timeliness of patient care.

Overall, the IHS system that we have installed allows us to have more accurate information, more legible records, the information is available without the need for a manual chart. We have more timely patient care in tracking, improved quality assurance, a cost-effective method of establishing resource usage, DRG information and many management tools which are available. This results, in turn, in more accurate data reporting and a better data validation process.

If the EDS system should be withdrawn at this time, we feel that there would be a great deal of frustration and difficulty in coping with our own staff members. We have the same initial investment, perhaps even on a larger basis than the DHCP system on an individual site would have because we have more applications which have been installed.

The time that we've utilized in entering our data would have to be repeated, as well as the time we've utilized in training our employees. Approximately 85 percent of the employees at our medical are involved in the computer in one form or another.

The quality of care, the timeliness of patient care, would both be adversely affected should our system be withdrawn before the DHCP system has reached our current on-line status.

Thank you.

Mr. **Gray**. Thank you, Ms. Boland. Mr. Carpenter, we'd be delighted to hear from you now.

STATEMENT OF KELLY CARPENTER

Mr. **Carpenter**. Thank you, Mr. Chairman. My name is Kelly Carpenter. I'm the Chief of Medical Administration Service at the VA Medical Center in Saginaw.

Saginaw is a 155-bed general medicine, surgical hospital. We have a satellite out-patient clinic approximately 135 miles of us at Gaylord, Michigan that starting its second year of operation. At Saginaw we're also completing our first year of an intern program.

We'd certainly like to think that the computer system that we have, the IHS system has allowed us to do some of these things. There's no question our workload has increased, our out-patient load, our in-patient load has dramatically increased. The length of stay has gone down. Again, we'd like to think that this is because of the computer system that we have.

Our concerns are the same expressed by everyone else. We have some highly motivated, highly outstanding employees. I think every one of those employees had some sort of input assisting in the what-ifs, working with McDonnell-Douglas to come up with a computer program that meets the need of VA Medical Center, Saginaw. I cannot make any comparisons with the DHCP system. All I know is what we have is specific to our site, and it's very effective at our site.

I've heard nothing here today that has more than what we have, with the exception of the pacemaker program, which by the way, is certainly an outstanding program. Again, our concerns are for the delivery of health care to our veterans. I think it will be hampered, depending on the timeliness of the transition of converting to DHCP; concern for the employees, for the time, the effort that they have put into to making this a successful program.

Basically those are the concerns that we have at Saginaw, and those are some of the programs that we have at Saginaw. Thank you.

Mr. **Gray**. Thank you very much. I'd like to ask any one of the panel if you personally had the opportunity of using your ADP system to develop a minor program to respond to a unique requirement that you had? Have you had that type of a problem? Have you tried to use these systems to develop——

Mr. **Carpenter**. We've had no problems in that area. We had some recent changes with the means test. We were able to bring this up with a very minimal amount of time. We had no problem with that at all.

Mr. **Gray**. Okay. Does the gentleman from Georgia have any questions?

Dr. **Rowland of Georgia**. No question. And the only comment, Mr. Chairman, is we really appreciate all of you being here today. Thank you very much.

Mr. **Gray**. Let me echo that, too. It's been a very fine hearing, and I know it has taken a lot of your time to come up. But on behalf of the chairman and all the members of the committee, we appreciate all of the witnesses coming today. And with that, the committee stands adjourned.

[Whereupon, at 4:23 p.m., the subcommittee meeting was concluded.]

APPENDIX

STATEMENT OF THE

HONORABLE G. V. (SONNY) MONTGOMERY

CHAIRMAN, SUBCOMMITTEE

HOSPITALS AND HEALTH CARE

AT A HEARING ON

HOSPITAL COMPUTER SYSTEMS

IN THE DEPARTMENT OF MEDICINE AND SURGERY

OF THE VETERANS' ADMINISTRATION

APRIL 8, 1987

THE SUBCOMMITTEE WILL COME TO ORDER.

THE PURPOSE OF OUR HEARING TODAY IS TO EXAMINE IN DETAIL THE STATUS OF THE VA'S DECENTRALIZED HOSPITAL COMPUTER PROGRAM. THIS PROGRAM IS REFERRED TO AS 'DHCP'.

WE CAN CERTAINLY ALL AGREE THAT INSTALLING MEDICAL COMPUTER SYSTEMS IN THE 172 VA HOSPITALS IS COMPLEX AND HAS ITS PROBLEMS.

BUT THERE IS MORE BEYOND THE TECHNICAL MATTERS OF HARDWARE, SOFTWARE AND INSTALLATION OF COMPUTERS. THERE IS THE TOUGH JOB OF CALCULATING THE COST AND EFFECTIVENESS OF A COMPUTER SYSTEM, BOTH ALONE AND IN COMPARISON WITH OTHER SYSTEMS.

PROBLEMS IN THE AREA OF COST COMPARISONS PRESENT MUCH OF THE DISAGREEMENT THAT HAS BROUGHT US TOGETHER HERE. WE CAN LIST THE PERFORMANCE STANDARDS AND WE CAN ARRAY THE OPTIONS TO MEET THE STANDARDS.

LET THERE BE NO MISTAKE ABOUT THE QUESTION WE FACE TODAY: TO COMPLETE THE DHCP SYSTEM OR TO SCRAP IT. THAT WOULD MEAN TO SCRAP THE FOUR YEARS OF EFFORT THAT HAVE BEEN EXPENDED; TO SCRAP THE $200 MILLION DOLLARS THAT HAVE ALREADY BEEN INVESTED; TO SCRAP THE TEN YEARS OF TESTING OF COMMERCIAL SYSTEMS; AND TO SCRAP THE TRAINING OF VA STAFF THAT HAS BEEN COMPLETED.

THE MOST SERIOUS WASTE OF ALL WOULD BE TO SCRAP A SYSTEM THAT IS OPERATIONAL TODAY IN 169 VA HOSPITALS AND THAT HAS THE STRONG SUPPORT OF USERS -- THE DOCTORS AND NURSES, PHARMACISTS AND OTHER HEALTH PROFESSIONALS -- WHO USE THE DHCP EVERY DAY TO IMPROVE THE QUALITY OF HEALTH CARE DELIVERED IN THE VA.

FOUR YEARS OF AGREEMENT AMONG THE VETERANS' AFFAIRS AND APPROPRIATIONS COMMITTEES OF BOTH THE HOUSE AND SENATE HAS PRECEDED THIS HEARING.

AND YET THE QUESTIONS THAT I THOUGHT WE HAD ANSWERED ARE BEING ASKED AGAIN. THE WORDS ARE DIFFERENT AND THEY COVER WITH NEW TALK THE OLD QUESTIONS: IS THE VA TO HAVE CENTRALIZED OR DECENTRALIZED COMPUTER SYSTEM? IS THE VA TO HAVE A COMMERCIAL OR TAILORED SYSTEM?.

IN FACT THE DHCP IS DECENTRALIZED. THAT WAS THE PLAN. BUT THERE IS CAPABILITY TO PROVIDE INFORMATION TO THE CENTRAL OFFICE OF THE VA.

IN FACT, THE DHCP IS ALSO A COMMERCIAL SYSTEM THAT IS BEING USED BY OVER 200 HEALTH CARE DELIVERY SYSTEMS INCLUDING THE LARGEST

HOSPITAL IN THE WORLD IN HELSINKI, FINLAND. IT IS A COMMERCIAL SYSTEM WHICH IS BASED ON DEVELOPMENTS MADE BY PROVIDERS OF MEDICAL CARE, THE CLINICIANS THEMSELVES WHO NEED THE SUPPORT COMPUTERS BRING.

IN FACT, HOWEVER, DHCP WAS DEVELOPED IN THE PUBLIC DOMAIN. NO COPYRIGHTS LIMIT THIS COMMERCIAL SYSTEM.

IN FACT, THE ALTERNATIVE COMMERCIAL SYSTEMS REQUIRE SUBSTANTIAL TAILORING FOR USE IN THE VA, AND THUS, ADDITIONAL COSTS.

THE REAL QUESTION POSED FOR TODAY BECOMES: WHICH SYSTEM IS THE VA TO HAVE: A SYSTEM DEVELOPED BY CLINICIANS USING TECHNIQUES WHICH ARE IN THE PUBLIC DOMAIN OR A SYSTEM DESIGNED BY COMPUTER ENGINEERS INVOLVING COPYRIGHTED TECHNIQUES WHICH REQUIRE EXPENSIVE LICENSING FEES TO BE PAID?

THAT IS, WHETHER TO COMPLETE THE DHCP SYSTEM OR REPLACE IT.

I MUST SAY THAT I AM CONCERNED THAT THE DECISION MADE SO LONG AGO MUST BE REVISITED. THE VETERANS AFFAIRS AND APPROPRIATIONS COMMITTEES OF THE HOUSE AND SENATE, THE GENERAL SERVICES ADMINISTRATION, THE OFFICE OF MANAGEMENT AND BUDGET AND THE VA HAVE AGREED TO GO WITH THE DHCP SYSTEM. WHEN WAS THE LAST TIME ALL OF THESE GROUPS WERE TOGETHER ON SOMETHING?

ALL OF THE EVALUATIONS SO FAR HAVE RECOMMENDED CONTINUATION OF THE DHCP SYSTEM. THESE EVALUATIONS HAVE BEEN CONDUCTED BY THE VA'S INSPECTOR GENERAL, THE DEPARTMENT OF THE AIR FORCE, THE A.D. LITTLE COMPANY, PRICE-WATERHOUSE CORPORATION, THE BOOZ-ALLEN & HAMILTON CORPORATION AND THE GENERAL ACCOUNTING OFFICE.

MANAGEMENT PROBLEMS IN DHCP WERE RECORDED, BUT THERE ARE NO FUNDAMENTAL FLAWS IN THE DHCP SYSTEM THAT ARE NOT CORRECTABLE. WHY TODAY -- AFTER THE EXPENDITURES OF HUNDREDS OF STAFF HOURS AND MILLIONS OF DOLLARS -- ARE WE ASKING AGAIN THE ORIGINAL QUESTIONS: CENTRALIZED OR DECENTRALIZED? COMMERCIAL OR TAILORED?

TODAY WE ARE HERE TO REDUCE COMPUTER JARGON TO UNDERSTANDABLE LANGUAGE AND TO RECEIVE TESTIMONY REGARDING THE CURRENT STATUS OF THE DHCP SYSTEM AND WHERE IT WILL GO IN THE FUTURE.

MANY OF YOU HAVE BEEN TOLD THAT THIS IS A SMALL ISSUE. THE HEALTH CARE OF VETERANS IS NOT A SMALL ISSUE. MANY OF YOU HAVE BEEN TOLD THAT MY INTEREST IN DHCP CANNOT BE UNDERSTOOD. LET ME TELL YOU THAT I CARE VERY MUCH THAT A COST-EFFECTIVE MEDICAL COMPUTER SYSTEM BE ESTABLISHED FOR THE VA. LET ME TELL YOU THAT I DO NOT WANT TO DELAY FOR SEVERAL MORE YEARS WHILE WE ASK AND ANSWER THE SAME QUESTIONS THAT WE HAVE ASKED AND ANSWERED BEFORE. I DO NOT WANT TO WASTE MORE FEDERAL FUNDS RETESTING SYSTEMS THAT WE HAVE ALREADY TESTED.

VETERANS AFFAIRS COMMITTEE MINORITY STAFF SURVEY OF MEDICAL CENTER DIRECTORS REGARDING DECENTRALIZED HOSPITAL COMPUTER PROGRAM (DHCP)

1. Richard Droske, Acting Director at Buffalo, NY VAMC and Director of Castlepoint VAMC

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, for both hospitals.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

It would be disastrous. It would set us back six years because it would take two to three years to set up a new system and time to adjust and get acquainted with a new system.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes, definitely, our current capacity has reached its limit.

*DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

There are always problems with computer systems...or various aspects of the systems, but you can look long and hard and you will not find any dissatisfaction with the total DHCP system.

2. Clark Graninger, Medical Director at Albany, New York

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Absolutely, even the doctors are into the system. Moved farther in the past three years with DHCP than in the previous twenty. Only when DHCP came on-line did we have anything that would work. The system is perfect for the users.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

It would hold us back and curb the program we have underway.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

We in Albany have had excellent crew, but could use additional hardware. We are not in bad shape compared to many hospitals.

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*This question was asked in each series, but the question and response where the response was a simple negative has been dropped.

3. James Dooley, Medical Director of Bronx, New York

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, the system is geared for DM&S and it is responsive to our needs. We feel very good about it.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would be very frustrating. Our system allows for expansion and the software is available. This would hinder our mission. DHCP has allowed me to meet our requirements in terms of quality assurance. The continuing evaluation of patient care would be hampered.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

We need additional hardware, but we have plans to receive it.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

The system is meeting our needs in a very outstanding manner. We developed and fought for the system and have a lot invested. To place the system on hold at this time would jeopardize the quality of care we provide.

4. Clyde Coraro, Medical Director, Syracuse, New York

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, have had some questions about the software and problems with waiting for software but they have ironed out the bugs. We don't have enough hardware. Our ports are full and the response time is starting to slow down.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would be a monumental blow to the program. It would mean we would have half a tool to do the job that must be done for our veterans.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Of course.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Firmly believe that it is the best system for providing care. Prior to DHCP we had a 21 day backlog on pharmacy and as a result of DHCP we currently have a one day turn-around time.

5. Dan Kadrovach, Medical Director, Fayetteville, Arkansas

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

We are very pleased with the DHCP system in the entire district (includes 7 hospitals). The system is very user friendly --- it was designed for physicians and they are not intimidated.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would mean that any innovations to improve the system would come to a screeching halt. It could cost time and resources.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

I have discussed it throughout the region and the consensus is that the system is working well and that any interference would jeopardize the progress we have made.

6. Dean Stordahl, Medical Director, Long Beach, California

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

The system which has been established is excellent. We at Long Beach have had extensive experience and the response with the DHCP system is excellent.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would be very damaging to our ongoing effort to update the system.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

We would be very concerned about any attempt to place the system on hold because our experience with vendors is that they historically provided a much less useful package at more cost.

7. Dr. Jenkins, Action Director, Reno, Nevada

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Very satisfied. It is incomplete, but it is expanding.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

If we must reevaluate, I recommend that we proceed with the planned system and simultaneously test other programs. It would be very unfortunate to freeze the system while we are waiting to see if various vendors could fulfill their promises.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Fundamentally the system is working very well and we would be floundering without DHCP with the amount of data we are now required to maintain. What those opposed to the DHCP system are saying is that one suit of clothes can be designed to fit everyone, and that simply is not the case.

8. Robert Long, Associate Director, Atlanta, Georgia

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

I just came from a briefing on the need to enhance and expand the system and any setback at this time would be damaging to the program.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Definitely, our hospital is as far along as any other in the country, and the system has a wide range of uses. The impact on the clinical side is a priority.

9. Thomas Holthdys, Medical Director, Togus, Maine

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, very much so.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would greatly impact on efficiency and would impact on patient veterans care itself.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes, and the sooner the better.

10. Marvin O'Rear, Medical Director, Livermore, California

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Given the current restrictions on our funding level we are very pleased.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would be disastrous to the progress we have made thus far. It would seriously handicap us in terms of keeping abreast of today's technology.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Additional core and core enhancements are needed.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

I would like to know who is dissatisfied with the system. There are strong merits in terms of uniformity, but Directors who free up funds elsewhere should be permitted to allocate these additional resources for DHCP enhancement. Given the funding restrictions we are very satisfied with the DHCP system.

11. Michael A. Parrell, Medical Director, Wikes-Barre, Pennsylvania

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, very much so.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

Would be very disappointed because we need additional hardware.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

One of the very best things the Veterans Administration has done is to put the DHCP system into use.

12. William Anderson, Medical Director, Los Angeles, California

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Our system is not entirely in place, but yes, I'm satisfied. The only problem is the lack of hardware.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

We would be moving backwards because of the state of the art and the software programs which are currently available.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

We were informed we would receive additional capability, but it must be placed in a separate building. We are the most complex hospital in the system and this type of system has been very helpful. Given the time and opportunity we can work out the bugs with the system.

13. Wilfred Kingsley, Medical Director, Wilmington, Delaware

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Overall, quite satisfied with the computer. We haven't faced any insoluble problems, but we need additional equipment.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

We are already at the maximum capacity. If we were unable to increase the capacity we would be forced to phase out various programs.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

CPU is needed.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Studied the various computer systems while attending Yale Medical School years ago, and have been very involved with ADP ever since. DHCP is one of the best at this time. We are moving in the right direction.

14. Virgil McIntyre, Medical Director, Prescott, Arizona

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

If this happens we will lose efficiency in treating our patients.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

We have not completed installation, and we need two more mainframes.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Setting up any system is never easy, but ours is on line, and we are receiving benefits from it.

15. Richard Issac, Medical Center, Lake City, Florida

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Very much so.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

If the system were placed on hold for another reevaluation, it would slow down implementation of the complete computerization. This is not the time. We need to expand and get the rest of the job done.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Definitely.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

No one that I know of in my hospital is dissatisfied. It is very easy to train people on the system. It is user friendly, and I know of no complaints.

16. Mr. Robert Newington, Medical Director, Newington, Connecticut

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Absolutely, emphatically.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would place a tremendous detriment to providing patient care.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Although we have a small hospital, the system is being used in many areas and we are anxious to expand.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Next month I will have been with the Veterans Administration for 30 years, and the DHCP is the the most progressive action VA has undertaken, and it has been activated in the finest manner. It has helped bring VA into the modern century.

17. Dr. John Presley, Associate Medical Director, Baltimore, Maryland

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, generally, the system is up in core areas and it is helpful with pharaceutical and M&S.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

Would dramatically impact on our efficiency if we could not expand.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes.

18. Jimmie Clay, Medical Director, Tuskegee, Alabama

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Very satisfied. I have a terminal in my office and can pull up a patient's history at a moments notice. We are on schedule with medical records and data retrival.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

We would be forced to start pulling various programs off the system because our work level is increasing and we are not at full capacity.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

We certainly would be able to use additional capacity because we are behind many other facilities.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

I have been in the VA for over 20 years and the DHCP has been one of the best management decision-making tools we have possessed. Patient care has been greatly improved. I have never talked to anyone in the VA who is dissatisfied with the DHCP system.

9. Clarence Nixon, Medical Director, Martinez, California

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

I have worked in the health care field for over 32 years and nothing in the private sector even comes close. I have worked in 10 hospitals and this system is perfect. It is a totally integrated database and extremely user friendly. Anyone who alleges there is user dissatisfaction simply does not have an understanding of DHCP compared to what is on the market.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would create an unmitigated disaster. We currently have some capacity problems, but we use the system at night so the system does not become overloaded.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Absolutely.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

I would be willing to place my reputation and my job on the line to say that no one in the private sector could set up a similar system in less than four years and at less than four times the cost.

20. Donald Burnette, Medical Director, Auguta, Georgia

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, but the system is undersized. We need additional equipment.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This action would be totally detrimental to our VA medical center.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes, absolutely.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Overall we are very satisfied, and we have made considerable progress in a short period of time and the system has improved efficiency.

Know of no one who is dissatisfied with the system.

21. Vincent Parrish, Medical Director, Little Rock, Arkansas

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, overall very satisfied with equipment. Somewhat underpowered initially, but adjustments were made and they are working well.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

I would be extremely disappointed. The system has helped, but is important that we continue to update and improve the system.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes. Could use additional units to provide service and we need additional staff.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

The VA developed software has been a tremendous boost in terms of delivering cost effective services in a timely manner.

22. Hugh Vickerstaff, District 10 Director, Birmingham, Alabama

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Most spectacular system in the federal government, and it is working beautifully. The federal government has years of experience with defense computer systems, but did not think it could put such a superior system in place.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

To tread water at this junction would be an absolute disaster.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

The software is available, but we need additional hardware.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

The system is superior to what you find in the private sector, much less elsewhere in the federal government.

23. Troy Page, Medical Director, Chillicothe, Ohio

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would hamper our ability to carry out the objectives we have established.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes, we are currently taxing our capacity.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

This is the third facillity I have worked in, and have found all those involved with DHCP enthusiastic and satisfied at all three. Concerned over the hospitals inability to progress more rapidly due to the lack of hardware funding.

24. Robert Dawson, Medical Center, Asheville, North Carolina

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Nothing but praise for the program.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

Hate to think we could not continue to move forward. We have just now gotten to the point where the system is starting to help our management and our patients. It would be a terrible waste of the software which has been developed, as well as the time, effort and talent of all our people.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes, we are in the process of identifying additional space for the hardware and the software is already available.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Cannot understand why there would be any question about the system unless there is a vested interest in a different system. Of course, there are growing pains to be expected with any system of this size, but all the Hospital Directors I have talked to are pleased with DHCP.

25. Fred Sala, Medical Director, Denver, Colorado

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, very much so.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

Don't do that to me now! Are currently trying to enhance. Want to be able to proceed at own pace.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Lends itself beautifully to efficiency. The DHCP provides the flexibility so that once a breakthrough occurs at one of the more progressive hospitals, it can be copied at other facilities because needs and services are so similar.

26. Albert Blecich, Medical Director, West Haven, Connecticut

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, it is on target and generally satisfactory.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

It would be very detrimental. It is a core system and would mean having only part of it.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Are currently moving at the right pace.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

The DHCP will be intimate part of operation.

27. Barbara Small, Medical Director, San Diego, California

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Yes, certainly.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

Would be devastating, going back in time.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

One CPU is currently slated for upgrade. Can progress as funds and software are available.

28. Roy McCracken, Medical Director, Montgomery, Alabama

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Absolutelv. The biggest problem at this point is insufficient hardware. The doctors are pleased with the system and knows of no one who is unsatisfied with the system or the software.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

This would have a very detrimental effect on patient care. We have started up several programs and we must be allowed to increase capacity.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

I know that in two or three years, if the United States Congress would simply give us the support we need, they would be very pleased with the results.

29. Peter Baglio, Medical Director, East Orange, New Jersey

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Of course we are very pleased after going so long with no system. There is always debugging to do with any system, but having extensive private sector experience with computers, this is the best we can expect.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

If capacity is limited, effectiveness of the system will be lost. It is a large system, but we must continue to streamline and standardize.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes, there is a major construction job going on right now.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

If we fail to move forward, we will be forced to step backwards. To place DHCP on hold while an evaluation is conducted would be doing an injustice to the delivery of health care to our nations' veterans.

30. Hugh Ferguson, Medical Director, North Hampton, Massachusetts

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

We have had very good success. We are on target with the packages and the entire program.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

It would be a serious setback. It would be a tremendous step backwards in the progress we have made.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Clearly, we would be able to absorb additional capacity.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Overall, we are doing well toward a totally integrated package as an agency. The tie lines we possess, the private sector cannot match.

31. Michael Kane, Medical Director, Bedford, Massachusetts

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

Very satisfied and the pharmacy and medical administration aspects of the program are already fully implemented.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

In capital letters I would say that it would be a serious setback to our hospital.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

Yes, both the management and the staff are very supportive and anxious to implement the remainder of the DHCP packages.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

Even a minor change in the strategy would seriously jeopardize our efforts in quality assurance and a number of other important areas.

32. Jerry Boyd, Medical Director, Boston, Massachusetts

ARE YOU SATISFIED WITH THE CURRENT DHCP SYSTEM AT YOUR HOSPITAL?

The system is doing everything it is intended to do and everything we want it to do.

WHAT WOULD BE THE IMPACT IF YOU WERE UNABLE TO INCREASE THE CAPACITY OF THE SYSTEM FOR TWO TO THREE YEARS?

If this happened we would find ourselves falling behind in the state of the art and be forced to play catch up all over again.

WOULD YOUR HOSPITAL BE ABLE TO USE ADDITIONAL CAPACITY EFFECTIVELY OVER THE AMOUNT CURRENTLY PLANNED?

For today we have sufficient capability, but we do wish to continue to expand.

DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING DHCP?

We are extremely pleased with the system.

STATEMENT OF HONORABLE
JOHN PAUL HAMMERSCHMIDT

THANK YOU, MR. CHAIRMAN,

YOU HAVE CALLED THIS HEARING AT A CRITICAL JUNCTURE FOR THE VA'S ACQUISITION OF A STATE OF THE ART AND COST EFFECTIVE MEDICAL COMPUTER SYSTEM. AS A STRONG SUPPORTER OF THE DECENTRALIZED HOSPITAL COMPUTER PROGRAM SYSTEM, KNOWN AS DHCP, AND OF YOUR POSITION ON DHCP, IT IS MY POSITION THAT IT WOULD BE A VERY SERIOUS MISTAKE TO INTERRUPT THIS SYSTEM NOW WITH ANOTHER EVALUATION. AS YOU KNOW, THE COMMITTEE STAFF HAS TALKED TO MANY OF THE VA PEOPLE IN THE FIELD ABOUT THE POSSIBILITY OF PLACING DHCP ON HOLD WHILE THE CONGRESS CONDUCTS YET ANOTHER EVALUATION OF THE SYSTEM.

WE ASKED THE STAFF TO DO THIS TO DETERMINE USER SATISFACTION OR LACK OF IT, TO DETERMINE EFFECTIVENESS OF THE SYSTEM OR LACK OF IT, AND TO DETERMINE IF OUR CURRENT FEELING ABOUT THE SYSTEM IS A CORRECT ONE.

WELL, EVEN I WAS SURPRISED WITH THE RESULTS OF THESE INQUIRIES. THE STAFF TALKED TO MORE THAN 35 HOSPITAL DIRECTORS AND FOUND NO ONE SUPPORTIVE OF A RECOMMMENDATION TO DELAY ENHANCEMENT OF THE DHCP SYSTEM. ALL WERE PLEASED WITH IT, AND I THINK IT SAFE TO SAY THAT ALL WOULD BE DISMAYED AT ANY SUBSTANTIVE CHANGES.

STAFF MEMBERS FROM A DIFFERENT COMMITTEE HAVE ALSO BEEN MAKING INQUIRIES ABOUT DHCP, BUT IN MY VIEW THEY MUST HAVE BEEN ASKING THE WRONG QUESTIONS. THEY APPARENTLY HAVEN'T BEEN ASKING THE SAME QUESTIONS THAT BROUGHT FORTH THE ANSWERS THAT WE HAVE RECEIVED. MR. CHAIRMAN, THE ONLY REAL PROBLEM WE WERE ABLE TO FIND CONCERNING THE DHCP SYSTEM INVOLVED THE SERIOUS LACK OF MORE HARDWARE FUNDING FOR THE PROGRAM.

MR. CHAIRMAN, LET ME CITE SOME EXAMPLES OF THE COMMENTS OUR COMMITTEE HAS RECEIVED FROM AROUND THE COUNTRY REGARDING THE PROGRAM. MICHAEL KANE, DIRECTOR OF THE BEDFORD, MASSACHUSETTS HOSPITAL SAID THAT HE AND THE ENTIRE STAFF OF HIS FACILITY ARE VERY SUPPORTIVE, AND EVEN A MINOR CHANGE IN CURRENT STRATEGY WOULD SERIOUSLY JEOPARDIZE EFFORTS TO ASSURE QUALITY PATIENT CARE.

DAN KADROVACH, DIRECTOR OF THE FAYETTEVILLE ARKANSAS HOSPITAL CENTER, SAYS THEY ARE VERY PLEASED WITH THE DHCP SYSTEM IN THE ENTIRE DISTRICT, WHICH INCLUDES SEVEN VA HOSPITALS...AND THAT ANY INTERFERENCE WOULD BRING THE INNOVATIONS THEY HAVE MADE TO IMPROVE THE SYSTEM TO A SCREECHING HALT.

JERRY BOYD, DIRECTOR OF THE BOSTON HOSPITAL, SAYS THAT THEIR DHCP SYSTEM IS DOING EVERYTHING IT IS INTENDED TO DO AND EVERYTHING THEY WANT IT TO DO. HE SAYS THAT IF THE SYSTEM WERE HELD UP FOR AN EVALUATION, THEY WOULD FIND THEMSELVES FALLING BEHIND IN THE STATE OF THE ART AND BEING FORCED TO PLAY CATCH-UP ALL OVER AGAIN.

CLARENCE NIXON, DIRECTOR OF THE MARTINEZ, CALIFORNIA VETERANS HOSPITAL HAS WORKED IN THE HEALTH CARE FIELD FOR OVER 32 YEARS AND SAYS THAT IN HIS OPINION NOTHING IN THE PRIVATE SECTOR EVEN COMES CLOSE TO DHCP. HE SAYS IT IS A TOTALLY INTEGRATED DATABASE AND IS EXTREMELY USER FRIENDLY. MR. NIXON SAYS HE IS WILLING TO PLACE HIS REPUTATION AND JOB ON THE LINE TO SAY THAT NO ONE IN THE PRIVATE SECTOR COULD SET UP A SIMILAR SYSTEM IN LESS THAN FOUR YEARS AND AT LESS THAN FOUR TIMES THE COST.

THESE SENIOR VA FIELD MANAGERS ARE NOT MERELY PROMOTING THE AGENCY LINE. IF YOU KNOW THESE MEN, YOU KNOW THAT THEY ARE TOTALLY DEDICATED TO WHAT IS BEST FOR THE CARE OF OUR VETERANS, AND, IF THEY THOUGHT SO, THEY WOULDN'T HESITATE FOR A MOMENT TO SAY THAT GOING FORWARD WITH DHCP WOULD BE A MISTAKE.

MR. CHAIRMAN, I WILL ASK THAT THE NAMES AND RESPONSES OF THESE 35 HOSPITAL DIRECTORS BE PLACED IN THE RECORD. OUR SURVEY WAS NOT A SCIENTIFIC POLL, BUT IT SPEAKS MORE STRONGLY THAN ANYTHING ELSE ABOUT THE EXTENT OF SUPPORT IN THE FIELD FOR DHCP.

MR. CHAIRMAN, UNTIL VERY RECENTLY, THE CURRENT VA MEDICAL COMPUTER PROGRAM WAS MOVING AHEAD WITH DELIBERATE SPEED. IT HAS HAD THE ENDORSEMENT OF THIS COMMITTEE AND MANY OTHER PUBLICS. ONE COULD WELL ASK WHY IT NOW FACES OBSTACLES SUFFICIENT TO WARRANT THIS HEARING. WE NEED TO EXPLORE THAT QUESTION IN DEPTH AS OUR HEARING PROGRESSES.

FOR MY PART, I WANT VA TO HAVE A GOOD QUALITY COMPUTER SYSTEM THAT ENHANCES QUALITY MEDICAL CARE, AND ONE THAT IS USER SATISFYING AND COST EFFECTIVE. IF THE CURRENT SYSTEM MEETS THESE TESTS, IT IS MY OPINION THAT IT SHOULD CONTINUE TO RECEIVE OUR ENTHUSIASTIC ENDORSEMENT.

STATEMENT OF HONORABLE
GERALD B. SOLOMON

I CONCUR WITH THE REMARKS OF THE RANKING MEMBER OF THE HOSPITALS AND HEALTH CARE SUBCOMMITTEE, MY GOOD FRIEND JOHN PAUL HAMMERSCHMIDT, AND WILL MAKE A BRIEF STATEMENT.

LET ME BEGIN BY SAYING THAT MY STAFF AND I HAVE MET WITH AND TALKED TO OVER 35 HOSPITAL DIRECTORS AND OTHER VA HEALTH CARE PROFESSIONALS INVOLVED WITH DHCP DURING THE PAST WEEK.

JOHN PAUL QUOTED SOME OF THEM IN HIS REMARKS AND BASED ON THESE CONVERSATIONS, I FIRMLY BELIEVE THERE IS NO REAL SUBSTANCE TO THE CONCERNS WHICH HAVE BEEN RAISED REGARDING THE BASIC DHCP APPROACH.

IS DHCP THE PERFECT SYSTEM; IS IT ALL THINGS TO ALL MEN? OF COURSE NOT. NOTHING IS, AND DHCP MAY NEED SOME IMPROVEMENTS. BUT i CANNOT UNDERSTAND WHY ANYONE WOULD INSIST ON FORCING THE VA TO BUY A VERY EXPENSIVE COMPUTER SYSTEM IT CLEARLY DOES NOT WANT. IT BEHOOVES US TO LISTEN TO WHAT THE VA'S MANAGERS IN THE FIELD HAVE TO SAY. IF THEY BELIEVE CHEVROLETS WILL DO THE JOB, AND THEY LIKE CHEVROLETS, WHY INSIST THEY HAVE CADILLACS?

I HAVE MET WITH AND TALKED TO VA OFFICIALS FROM MY HOME STATE OF NEW YORK, INCLUDING DR. RON GINSB~~E~~uRG, WHO WILL BE TESTIFYING BEFORE US TODAY, AND HAVE FOUND THEM ALL TO BE VERY SUPPORTIVE OF THE DHCP SYSTEM. THERE IS ABSOLUTELY NO SUPPORT FOR THE NOTION OF PLACING THE SYSTEM ON HOLD WHILE YET ONE MORE EVALUATION IS CONDUCTED.

CLARK GRANINGER, DIRECTOR OF THE ALBANY VA HOSPITAL SAYS THE SYSTEM IS PERFECT FOR THE USERS AND THAT PLACING THE SYSTEM ON HOLD WOULD CURB THE EXCELLENT PROGRAMS THEY NOW HAVE UNDERWAY.

THE DIRECTOR OF THE BRONX HOSPITAL CENTER, JAMES DOOLEY, SAID THAT INTERFERENCE WITH THE PROGRAM WOULD JEOPARDIZE THE QUALITY OF CARE THEIR HOSPITAL CURRENTLY PROVIDES OUR VETERANS.

RICHARD DROSKE, ACTING DIRECTOR OF THE BUFFALO HOSPITAL AND DIRECTOR OF THE CASTLEPOINT, NEW YORK HOSPITAL, TOLD US THAT YOU CAN LOOK LONG AND HARD AND YOU WILL NOT FIND ANY DISSATISFACTION WITH DHCP. HE ALSO SAID CONGRESSIONAL INTERFERENCE WITH DHCP WOULD SET THEM BACK SEVERAL YEARS BECAUSE IT WOULD TAKE TIME TO SET UP A NEW COMPUTER AND EVEN MORE TIME TO GET ACQUAINTED WITH THE NEW SYSTEM.

I KNOW ALL OF THESE MEN, AND I HAVE THE GREATEST RESPECT FOR THEIR INTEGRITY AND PROFESSIONAL JUDGEMENT. NOT ONE OF THE OVER 35 HOSPITAL DIRECTORS WE TALKED TO WAS DISSATISFIED WITH DHCP. IN FACT, NOT ONE OF THESE DIRECTORS KNEW OF A HOSPITAL DIRECTOR, A CHIEF OF STAFF, OR A MEDICAL DIRECTOR WHO WAS NOT TOTALLY SUPPORTIVE AND PLEASED WITH DHCP.

THIS BRINGS US TO THE REAL REASON WHY WE ARE ALL HERE TODAY!

ALTHOUGH WE HAVE DOZENS OF STATEMENTS IN SUPPORT OF DHCP THERE WAS ONE STATEMENT WHICH CLEARLY SUMMED UP THIS DHCP CONTROVERSY. THAT STATEMENT WAS MADE BY ROBERT DAWSON DIRECTOR OF THE VA MEDICAL CENTER IN ASHVILLE, NORTH CAROLINA. MR. DAWSON SAID, AND I QUOTE..."I CANNOT UNDERSTAND WHY THERE WOULD BE ANY QUESTION ABOUT THE DHCP SYSTEM UNLESS THERE IS A VESTED INTEREST IN A DIFFERENT SYSTEM."
DEAN STORDRHL, DIRECTOR OF THE LONG BEACH HOSPITAL RAISED A SIMILAR CONCERN. HE SAID THEY WOULD BE VERY CONCERNED ABOUT ANY ATTEMPT TO PLACE DHCP ON HOLD BECAUSE OUR EXPERIENCE WITH VENDORS IS THAT THEY HISTORICALLY PROVIDE A MUCH LESS USEFUL PACKAGE AT MORE COST.

TO DEALY DHCP WHILE AN EVALUATION IS CONDUCTED WOULD BE DOING AN INJUSTICE TO THE DELIVERY OF HEALTH CARE TO OUR NATIONS' VETERANS. THE VA'S MEDICAL COMPUTER USERS ALREADY KNOW WHAT THEY NEED. WE SHOULD DO OUR BEST TO SEE THAT THEY ARE PROVIDED WITH THE DHCP, INSTEAD OF LONG AND COSTLY DELAYS.

Ronald E. Ginsburg MD
103 EUCLID AVENUE
P. O. BOX Y
ALTAMONT, NEW YORK 12009

March 25, 1987

Hon. G.V. (Sonny) Montgomery
Chairman, Committee on Veterans Affairs
335 Cannon House Office Bldg.
Washington, D.C. 20515

Dear Mr. Chairman:

As a user of DHCP within the VA, I would like to thank you for your support of this valuable program. Enclosed, please find copies of letters I have forwarded to the Senators from New York state.

If there is anything further I can do to help keep DHCP alive, please let me know.

Sincerely,

Ronald E Ginsburg

Ronald E. Ginsburg, M.D.

Ronald E. Ginsburg MD
103 EUCLID AVENUE
P O BOX Y
ALTAMONT, NEW YORK 12009

March 24, 1987

Honorable Alfonse D'Amato
US Senate
Leo O'Brien Federal Building
Room 420
Albany, NY 12207

Dear Senator D'Amato:

I am an Associate Professor of Pathology at Albany Medical College and Chief, Anatomic Pathology at VA Medical Center, Albany, New York. I am writing to you because of concerns raised by the enclosed letter sent from the Chairman, Committee on Veterans Affairs to the Chairman, Subcommittee on HUD-Independent Agencies dated March 13, 1987. This letter discusses the future, or its demise, of the VA-developed Decentralized Hospital Computer Program (DHCP).

The DHCP within the Department of Medicine and Surgery (DM&S) is a vital tool to my practice of pathology, encompassing patient care, teaching, and clinical research. For example, if a patient is in the operating room and a surgeon sends a piece of tissue for a rapid diagnosis (frozen section) to the pathologist, information on all prior tissues for that patient can be immediately retrieved via computer terminal for review and comparison with the present specimen. At the same time, all the patient's laboratory and radiology data can be accessed through the same computer session on the same terminal. This would not be possible without the presence of an integrated computer system.

The VA has one of the largest health care systems in the world. DHCP-developed programs are running well in virtually ALL of the VA hospitals as well as at March AFB & Fitzsimmons AFB. The DOD is also implementing a health care system that is strongly based on modules built by the VA through DCHP.

Amazingly, all of this functionality has been developed using our own VA talent and resources at a significantly lower cost than a comparable vendor-provided system. An independent study has shown that DHCP total program cost would be $777 million as compared to $1.496 billion for an outside vendor initiated program.

A key component of DHCP has been the decentralization of ADP functions and responsibility to local medical center directors. For the first time, VA medical centers are fully in charge of their own computers.

Yet, despite an exceptionally well functioning program, there appers to be a move in Congress to remove the management responsibility and future development from VA control and place it in the hands of a private company AT THE GREATER COST TO THE TAXPAYER! It seems unfortunate that such a well-run government administered program should be dismantled for the mere profit and gain of a private interest group whose concern is apparently not the welfare of the taxpayer.

I would like to extend an invitation for you to visit Albany VAMC and see the program in action at your earliest convenience.

I have included for your review, a description of DHCP and a copy of the letter sent by the Chairman, Committee on Veternas Affairs to the Chairman, Subcommittee on HUD-Independent Agencies.

Sincerely,

Ronald E. Ginsburg MD.

Enclosures: 2

DON EDWARDS, CALIFORNIA
DOUGLAS APPLEGATE, OHIO
DAN MICA, FLORIDA
WAYNE DOWDY, MISSISSIPPI
LANE EVANS, ILLINOIS
MARCY KAPTUR, OHIO
TIMOTHY J. PENNY, MINNESOTA
HARLEY O. STAGGERS, JR., WEST VIRGINIA
J. ROY ROWLAND, GEORGIA
JOHN BRYANT, TEXAS
JAMES J. FLORIO, NEW JERSEY
KENNETH J. GRAY, ILLINOIS
PAUL E. KANJORSKI, PENNSYLVANIA
TOMMY F. ROBINSON, ARKANSAS
CHARLES W. STENHOLM, TEXAS
CLAUDE HARRIS, ALABAMA
JOSEPH P. KENNEDY, II, MASSACHUSETTS
ELIZABETH J. PATTERSON, SOUTH CAROLINA
TIM JOHNSON, SOUTH DAKOTA
JIM JONTZ, INDIANA

MACK FLEMING
CHIEF COUNSEL AND STAFF DIRECTOR

ONE HUNDREDTH CONGRESS

G.V. (SONNY) MONTGOMERY
CHAIRMAN

U.S. House of Representatives
COMMITTEE ON VETERANS' AFFAIRS
335 CANNON HOUSE OFFICE BUILDING
Washington, DC 20515

GERALD B.H. SOLOMON, NEW YORK
JOHN PAUL HAMMERSCHMIDT, ARKANSAS
CHALMERS P. WYLIE, OHIO
BOB STUMP, ARIZONA
BOB McEWEN, OHIO
CHRISTOPHER H. SMITH, NEW JERSEY
DAN BURTON, INDIANA
MICHAEL BILIRAKIS, FLORIDA
THOMAS J. RIDGE, PENNSYLVANIA
JOHN G. ROWLAND, CONNECTICUT
ROBERT K. DORNAN, CALIFORNIA
ROBERT C. SMITH, NEW HAMPSHIRE
JACK DAVIS, ILLINOIS

March 13, 1987

Hon. Edward P. Boland
Chairman, Subcommittee on
 HUD-Independent Agencies
H-143 The Capitol
Washington, DC 20515

Dear Mr. Chairman:

After discussing the VA's Decentralized Hospital Computer Program (DHCP) on the Floor yesterday, we received a copy of your letter of March 9 to the Administrator, directing the VA not to proceed with awarding the contract for the purchase of additional hardware using appropriated FY-87 funds.

We are disappointed that you have taken this position since your staff has been involved with the development and implementation of the DHCP from the beginning in the early 80's. I believe stopping the program at this stage will cause irreparable damage to the ability of VA hospitals to provide timely and quality health-care service to veterans.

Our committee has held numerous meetings and hearings on the DHCP. All along the way VA has kept the committee advised of its actions. Our only complaint has been that VA has been too long in moving to purchase the hardware to get the program up and running. Although it has not been without some problems, it has functioned extremely well and the users (physicians, nurses, etc.) are pleased with the system. Numerous studies, investigations and evaluations have been made and this committee is unaware of any "conflict" that currently exists.

You mention in your letter to the Administrator that the recent Booz, Allen and Hamilton report "contains many qualifications" about the Decentralized System. That report highlighted the positive and negative aspects of the systems involved and recommended that VA stay with its current system. The report points out that the DHCP program scenario would cost only $777 million, as compared to $1.496 billion for the IHS program scenario. Yet your letter states that it is unclear which system is preferable.

Hon. Edward C. Boland
Page 2

March 13, 1987

We must take strong issue with the statement that the "only consensus of opinion appears to be that a change in the current approach is required." The Booz, Allen and Hamilton report does not suggest that, the Inspector General does not suggest that, and, thus far, neither has the General Accounting Office. We hope to have a draft GAO report evaluating the DHCP within the next 30 days.

Mr. Chairman, we ask that you reconsider your order to VA to not proceed with its contract under the circumstances you have outlined in your letter. Obviously there is a difference of opinion between us on how VA should proceed, but we hope you will allow the agency to go ahead with enhancement of the current system from funds your committee has recommended and the Congress approved for the current fiscal year while further studies are being made by OTA or anyone else. We ask that you not penalize veterans who are the beneficiaries of a good health-care system now, while we attempt to resolve problems that exist between the two committees.

Sincerely,

Sonny
G. V. (SONNY) MONTGOMERY
Chairman

Jerry
GERALD SOLOMON
Ranking Minority Member

cc: Veterans Service Organizations

DAIGGER

On the Systems Side

Once DHCP was conceptualized, VA health care system planners and developers set out to make the system a reality. Armed with basic concepts (an integrated patient data base . . . modular construction . . . grass roots involvement of VA health care professionals . . . and phase-in of applications) they began to address the critical need areas of medical administration, pharmacy, and laboratory.

The methodology chosen involved using in-house talent already experimenting with a new type of software development featuring system prototyping in the **MUMPS** programming language. Developed specifically for hospital applications, the Massachusetts General Hospital Utility Multi-Programming System (MUMPS) offered the following advantages:

- data base construction
- simple methods of program creation, modification and de-bugging
- a uniform data element terminology and coding system

The VA now uses MUMPS in its medical centers to support the vast majority of clinical and administrative functions. VA system developers have pioneered the development of system software tools which speed up the prototyping process and further insure the compatibility and exportability of programs. The best-known and most powerful of these MUMPS software tools is the **VA File Manager**. The File Manager is a package of routines which creates and maintains a data base by prompting end users in defining the data base structure, entering and updating data base entries, and retrieving data and formatting reports.

And On the Management Side

At the same time, a management structure was being developed to support the concept of decentralization.

Six Verification and Development Centers (VDCs) were established and charged with taking the lead in developing and verifying specific DHCP applications. To assure that applications met the DHCP standard, a two-stage testing procedure was developed to verify software:

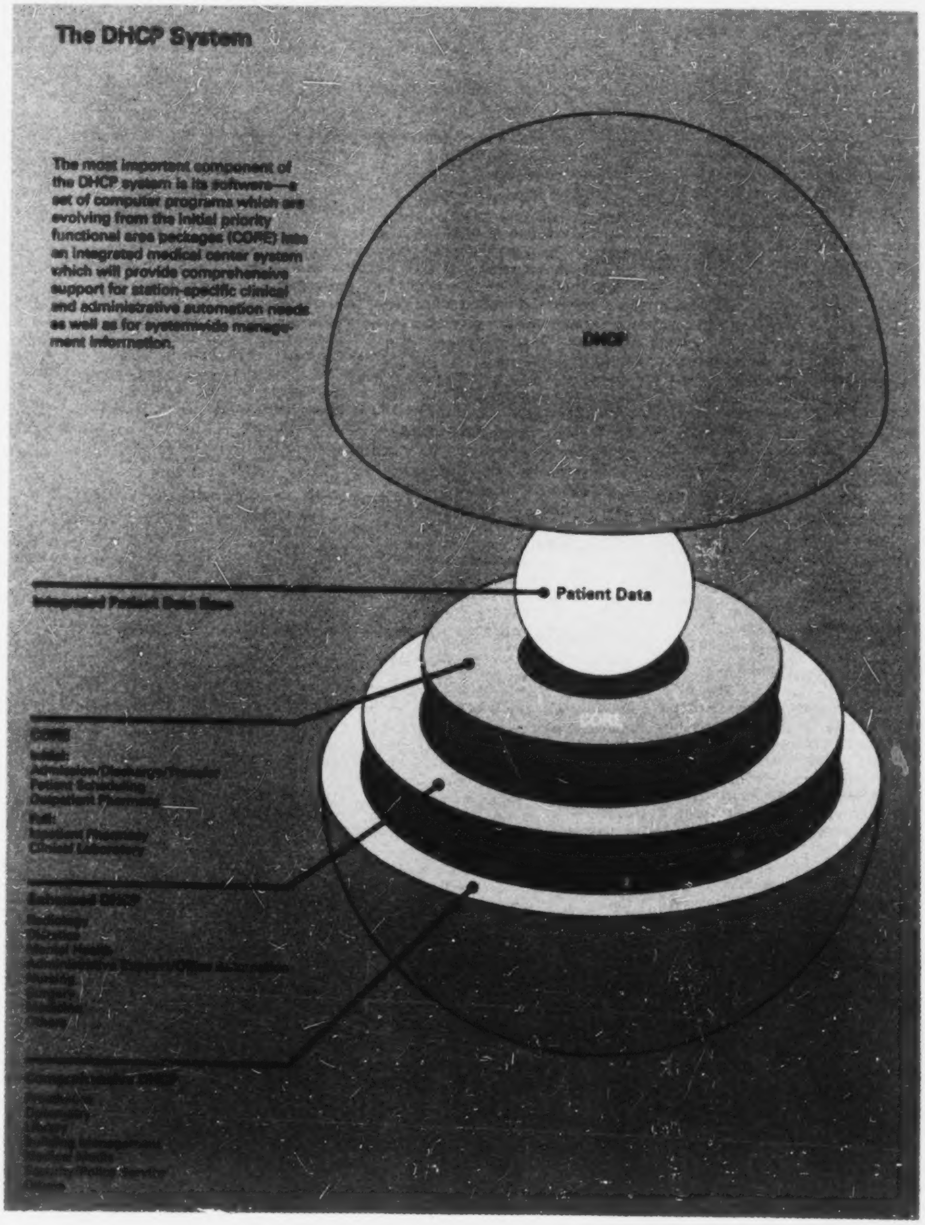
- *Alpha testing* is the initial test situation, usually performed at a location convenient to the software developer. During this phase the software is often modified, expanded and improved.
- *Beta testing* begins when the developer feels that the software is ready for serious testing in a medical center environment. A test site is chosen, testing parameters developed, and the final test phase initiated. All portions of the package are exercised and load testing performed. The VDC assigned as verifier participates in this process.

The establishment of **Special Interest User Groups (SIUGs)** has been a key factor in the successful integration of program area expertise into the software development process. These SIUGs (composed of medical center and VA central office experts for a program area such as Pharmacy or Laboratory) provide the grass roots involvement so necessary in assuring that system developers are able to fit the applications to the needs of the end user. All software development is based on the SIUG's direction. If early development efforts have taken place, this work is reviewed and may be utilized in meeting the program area requirements. The actual development may be done at the responsible VDC, or may be assigned to one of the medical centers, and monitored by the responsible VDC. In any case, the development process is an iterative one, with SIUG review at many points along the way. The SIUG is also instrumental in the verification/certification process, with its stamp of approval necessary before applications software is deemed exportable to VA medical centers.

To oversee the program and initiate centralized procurements, a new **Medical Information Resources Management Office (MIRMO)** was established in the VA Central Office. One of the first tasks undertaken by MIRMO was the development of Requests for Proposal (RFPs) to obtain hardware for the VA medical centers to support initial DHCP applications. Medical center profile data such as volume and type of workload were fed into an analytical model, resulting in the development of five different computer workload "classes" of VA medical centers. Then, a basic configuration of computer hardware was developed to support each of these five groups. These RFPs were released in May of 1983.

The DHCP System

The most important component of the DHCP system is its software—a set of computer programs which are evolving from the initial priority functional area packages (CORE) into an integrated medical center system which will provide comprehensive support for station-specific clinical and administrative automation needs as well as for systemwide management information.



Integrated Patient Data Base

CORE
Initial:
Admission/Discharge/Transfer
Patient Scheduling
Outpatient Pharmacy
Full:
Inpatient Pharmacy
Clinical Laboratory

Enhanced DHCP
Radiology
Dietetics
Mental Health
Administrative Support/Office Automation
Nursing
Surgery
Medicine
Others

Comprehensive DHCP
Prosthetics
Dentistry
Library
Building Management
Medical Media
Security/Police Service
Others

To the Medical Centers

With CORE Applications and Beyond

September 1983 saw the award of $82 million in contracts to multiple vendors for over 400 minicomputers, 13,000 video display terminals, 7,700 printers, and 900 communication devices—the largest computer procurement in the history of the Veterans Administration. Initial deliveries under these contracts provided medical centers with the equipment to support the implementation of the applications for the first-priority areas of patient registration, admission/discharge/transfer, patient scheduling and outpatient pharmacy. Subsequent deliveries of equipment expanded the computer capability to support inpatient pharmacy and laboratory applications.

One of the real advantages of using ANSI Standard MUMPS has been the wide competition encouraged in the vendor community in responding to equipment needs. For example, any standard ASCII terminal can be used to access DHCP systems, resulting in a substantial degree of vendor independence.

As hospital directors assumed increasing responsibility for their own ADP systems, recruitment was initiated for ADP site managers. By the end of 1984, almost every VA hospital had hired a site manager to tailor the system to fit smoothly into the routine operations of the individual medical center and to prepare for future system expansion.

DHCP applications software has been developed incrementally and implemented in a phased approach. First to be addressed was support for the critical need areas of medical administration, pharmacy and laboratory. By 1984 every VA hospital had received resources to support what was known as **Initial CORE**—the applications providing support to the areas of medical administration, patient scheduling and outpatient pharmacy. These functions make it possible for medical center staff to simplify patient registration; to admit, discharge, transfer and track patient status/location; to generate gains and losses, ward rosters and bed census reports; and to schedule patients (both inpatients and outpatients) for clinic appointments. In addition, Outpatient Pharmacy software enables staff to produce prescription labels, check drug interactions and maintain patient medication profiles and drug inventory control.

As a follow-on, the **Full CORE** incorporates the applications of Inpatient Pharmacy and Clinical Laboratory. Inpatient Pharmacy allows order entry for unit dose, ward stock, and IV additives. Clinical Laboratory software permits test requests to be entered from the ward and test results to be produced in a variety of formats and at a number of different locations.

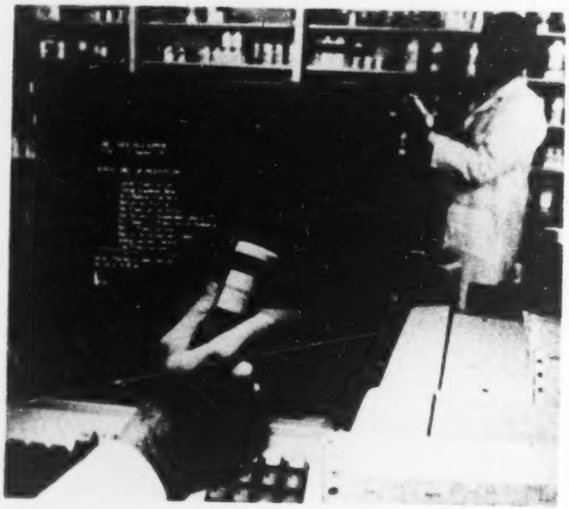
CORE applications are the foundation of every VA medical center DHCP system. The CORE and all subsequent applications are built around a set of system support software which allows them to be installed in a completely modular manner.

As a logical extension of the CORE, a set of modules called **Enhanced DHCP** will make available automated support for primary clinical services which are usually considered part of the therapeutic package, and for certain management/administrative functions that cut across all hospital services. Included in Enhanced DHCP are such functions as radiology, engineering, administrative support/office automation, nursing, surgery, dietetics, and mental health.

Finally, each medical center will be able to round out its own integrated system by adding additional, optional modules which address clinical or support services not involved in carrying out physicians' direct orders or which do not have as high or complex a volume or paperwork as those addressed in the Enhanced DHCP packages. Examples of these optional modules, known as **Comprehensive DHCP** are optometry, prosthetics, medical media, security/police service, and building management.

The Decentralized Hospital Computer Program

Flexible, integrated, state-of-the-art, information processing serving the complex needs of the VA hospital network.



Recognizing the diverse characteristics of 172 VA medical centers combined with the requirements of many other specialized health care service facilities such as outpatient clinics, nursing homes, and domiciliaries, the Decentralized Hospital Computer Program (DHCP) was designed to provide:

- applications software that is standardized and exportable to all VA medical centers, yet flexible enough to be adaptable to each individual health care environment . . .
- standard data elements, simplifying data exchange and interchange and the aggregation of management information . . .
- an integrated patient data base permitting patient information to be entered once at registration and accessed later by other functional areas such as the laboratory and pharmacy . .
- equipment requirements that would not lock the Agency into dependence on any specific vendor—facilitating consolidated centralized, competitive procurements . . .
- ease of use—a tool to assist administrative personnel and health care providers in the performance of the health care mission

Since February of 1982, VA Management has focused attention on the rapid implementation of DHCP. A key component of this successful program has been the decentralization of ADP functions and responsibility to local medical center directors. **For the first time VA medical centers are fully in charge of their own computers.**

DHCP—the Future

Today, the VA Department of Medicine and Surgery (DM&S) remains dedicated to the principle of a phased evolution of automated clinical and administrative support, leading to an integrated hospital information system in every VA hospital. And underlying all automation efforts is a commitment to the "connectivity" of systems on all levels—within the hospital environment, between the hospital and DM&S Central Office elements, and between the Department and other agency elements. The Decentralized Hospital Computer Programs is playing an essential role in fulfilling this commitment by providing the basic building blocks of information from which spin-off aggregate data can be derived to feed a hierarchical management information structure serving all levels of DM&S management. Also in the works are plans to link the VA hospitals and Central Office in a nationwide network using VADATS, the Agency's new packet-switching data transmission network.

The Decentralized Hospital Computer Program continues its dynamic interaction with the VA health care community, expanding to fill new needs and refining already developed functions. The Kernel (a VA-developed software management tool) is being enhanced to add such features as expanded File Manager/Mail Manager which will support networked communications, interstation transfers of patient data, and improved terminal handling and related activities.

Software development is underway for areas such as nursing, dietetics, radiology, surgery, and mental health, and new Special Interest User Groups continue to be established for program areas seeking to be included under the DHCP umbrella. Once the Initial and Full CORE modules have been installed, each hospital director will have the option of deciding if, when, and in what order to install a growing variety of other applications. And concurrent with new development efforts, DHCP post-implementation evaluation data are providing constant feed-back to the system development process, assuring that DHCP applications will continue to be responsive to the changing environment of the medical center.

Growing almost as fast as the Program itself is the amount of interest being expressed in the DHCP concept, both from other government agencies and from the medical and ADP communities at large. Putting computing power in the hands of the end user is receiving a lot of attention these days. The proponents of the Decentralized Hospital Computer Program were among the first to see that combining the exceptional power and flexibility inherent in this concept with the substantial benefits to be realized from modular, standardized software development might yield the best of both worlds for a large-scale implementation effort.

For further information contact:

Medical Information Resources
Management Office (MIRMO)
810 Vermont Avenue, N.W., Room 654
Washington, D.C. 20420
Commercial—202-389-5237
FTS—8-389-5237

Verification and Development Center
VA Medical Center
Albany, New York 12208
FTS—8-563-9663 Com. (518) 462-3311
(Ext. 630)

Verification and Development Center
VA Medical Center
50 Irving Street, N.W.
Washington, D.C. 20420
FTS—8-921-8504 Com. (202) 745-8504

Verification and Development Center
VA Medical Center
700 South 19th Street
Birmingham, AL 35233
FTS—8-534-6975 Com. (205) 933-8101

Verification and Development Center
VA Medical Center
Edward Hines, Jr. Hospital
Hines, Illinois 60141
FTS—8-387-6201

Verification and Development Center
VA Medical Center
500 Foothill Boulevard
Salt Lake City, UT 84148
FTS—588-1287 Com. (801) 584-1287

Verification and Development Center
211 Main Street, Room 1702
San Francisco, CA 94105
FTS—8-454-7550 Com. (415) 974-0262

April 3, 1987

Honorable G. V. (Sonny) Montgomery
Chairman, Committee on Veterans Affairs
House of Representatives
Washington, D.C. 20515

Dear Mr. Montgomery:

I understand that comparing the merits of the DHCP system with the McDonnell Douglas Computer System or other private vendor is being considered.

It would be extremely important while this comparison is being made not to stop funding the DHCP but to continue the funding until the day before a decision is made, if a decision is made to switch to another system. To do otherwise and stop supporting the DHCP while a comparison is being made could result in disruption in the management of the VA medical centers and would have very serious effects on health care.

We are now only just beginning to master the DHCP system; for example, getting our laboratory on line, being able to get good data about the number and types of patients seen, getting the appointment schedule going, etc. If we stop the DHCP system and do not continue to add to it and support it, the results will be, as I said before, extremely serious. It would not be a waste of money to continue to support the DHCP mainframe even though it would not ultimately be used, since it would still be a valuable computer resource that could be well and profitably used by the VA medical center system.

If the DHCP system is not supported before the switch over, if a switch does occur, this might result in a considerable period of time, which would be very damaging to our patient care efforts. Therefore, I urge you to continue to support the DHCP system.

I'm writing this as a private citizen, but I have considerable knowledge concerning the above subject matter since I am Chief of Staff, Menlo Park Division, at the VA Medical Center in Palo Alto, California.

Sincerely yours,

Mark P. Graeber
MARK P. GRAEBER, M.D.

Mark P. Graeber, M.D.
941 Willow Road
Menlo Park, CA 94025

STANFORD UNIVERSITY SCHOOL OF MEDICINE
STANFORD, CALIFORNIA 94305

Department of Pathology

April 3, 1987

Honorable G.V. (Sonny) Montgomery
Chairman, Committee on Veterans' Affairs
House of Representatives
Washington, D.C. 20515

Dear Mr. Montgomery:

I wish to strongly advise the continued implementation and vigorous support of the Veterans Administration Decentralized Hospital Computer Program:

1. Despite some faults, it is a well-designed system.
2. We've already invested very considerable time and energy in the implementation of this system.
3. Switch to another system would substantially delay the already tardy introduction of computer use in our hospital.
4. The delay (of an estimated 5 years) would not only be expensive and demoralizing to our staff, but may, because of personnel shortages, impair the delivery of medical care to veterans patients at this institution.
5. The merits of the other systems being proposed have yet to be demonstrated superior to the present systems and their cost, as I see it, is not likely to be substantially different.

I respectfully request your consideration of these factors, and I very much hope you will see fit to discourage a changeover in data processing systems at this time.

Sincerely,

Luis F. Fajardo, M.D.
Professor of Pathology
Stanford University School of Medicine
and
Chief, Laboratory Service
Veterans Administration Medical Center
Palo Alto, California 94304

LFF/dlb

April 3, 1987

Honorable G.V. (Sonny) Montgomery
Chairman, Committee on Veterans' Affairs
House of Representatives
Washington, D.C. 20515

Dear Mr. Montgomery:

I have just learned that funding for the Veterans Administration Decentralized Hospital Computer Program may be discontinued while the McDonnell Douglas Computer System is considered. With direct DHCP experience as a Laboratory Computer Application Manager, I think that this action would not be in the best interest of the veteran patient.

The DHCP Laboratory program allows test results to be reported to the physician and ward much sooner than with our old manual system. This will facilitate more timely treatment and in some cases may mean that a patient is released sooner. Critical or life threatening values are flagged by the system so there is less likelihood of being missed by laboratory or physician. Since physicians can obtain their patients' test results via CRT, and results are automatically printed on urgent care wards, phone calls to the laboratory for test results are greatly reduced (up to 80% of all calls to the laboratory). Test counts and talleys used for statistical reporting to VA Central Office are more accurate and less time consuming.

These are just a few of the items that I feel will make a difference in patient care relative to the Laboratory DHCP.

I don't feel that we should discontinue our efforts to improve patient care relative to the DHCP while we wait for another computer system to be evaluated when it is not clearly delineated that a change to the McDonnell Douglas system will occur. I request that you continue to support the DHCP system.

Sincerely,

Mary Cox

Mary Cox
Quality Control Coordinator
Laboratory Service (113)
Veterans Administration Medical Center
Palo Alto, California 94304

MC/dlb

STANFORD UNIVERSITY MEDICAL CENTER

STANFORD, CALIFORNIA 94305 • (415) 497-6110

FRANKLIN G. EBAUGH, JR., M.D.
Associate Dean for VA Affairs and
Professor of Medicine
Stanford University School of Medicine
(Mailing address: 3801 Miranda Avenue,
Palo Alto, California 94304)

March 27, 1987

Honorable G. V. (Sonny) Montgomery
Chairman, Committee on Veterans' Affairs
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I understand that comparing the merits of the DHCP system with the McDonnell Douglas Computer System is being considered.

It would be extremely important while this comparison is being made not to stop funding the DHCP but to continue the funding until the day before a decision is made, if a decision is made to switch to another system. To do otherwise and stop supporting the DHCP while a comparison is being made would result in total and utter chaos in the management of the VA hospitals and would have very serious effects on health care.

We are now only just beginning to master the DHCP system, for example, getting our Laboratory on line, being able to get good data about the number and types of patients seen, getting the appointment schedule going, etc. If we stop the DHCP system and do not continue to add to it and support it, the results will be, as I said before, absolutely catastrophic. Furthermore, the cost of the mainframe is a smaller part than the peripherals, which could be used under either system. Also, it would not be a waste of money to continue to support the DHCP mainframe even though it would not ultimately be used, since it would still be a valuable computer resource that could be well and profitably used by the VA hospital system.

If the DHCP system is not supported before the switch over, if a switch does occur, this might result in a down time of from five to seven years, which would be very damaging to our patient care efforts. Therefore, I urge you to continue to support the DHCP system.

I'm writing this as a private citizen, but I have considerable expertise concerning the above subject matter since I am Chief of Staff at the VA Medical Center in Palo Alto, California.

Sincerely,

FRANKLIN G. EBAUGH, JR., M.D.

APR 2 1987

HONORABLE G.V. (SONNY) MONTGOMERY
CHAIRMAN, HOUSE VETERANS AFFAIRS COMMITTEE
HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

DEAR CONGRESSMAN MONTGOMERY:

IT HAS RECENTLY COME TO MY ATTENTION THAT THE APPROPRIATIONS COMMITTEES OF BOTH THE SENATE AND HOUSE OF REPRESENTATIVES HAVE PROPOSED A REASSESSMENT OF THE VA'S DEPARTMENT OF MEDICINE AND SURGERY'S DHCP ADP INIATIVE.

THE IMPLICATIONS OF SUCH AN ASSESSMENT, TO INCLUDE THE POSSIBILITY THAT AN ALTERNATIVE TO DHCP WOULD BE MANDATED, ARE CLEAR AND POTENTIALLY DISASTEROUS TO THE DEPARTMENT OF MEDICINE AND SURGERY'S EFFORTS TO MODERNIZE.

DHCP, WITHOUT RESERVATION, HAS BEEN THE MOST SIGNIFICANT ACHIEVEMENT IN DM&S IN THE LAST 10 YEARS. IT'S SIMPLE, COST EFFECTIVE AND, POSSIBLY MOST IMPORTANT, IT WORKS. TO SHELVE DHCP, IN SPITE OF ITS EFFICACY, AND TO SUBSTITUTE A COMMERCIAL ALTERNATIVE WOULD BE DISASTEROUS TO THE OVERALL GOALS AND OBJECTIVES OF DM&S AND DIRECTLY IMPAIR THE PROVISION OF QUALITY MEDICAL CARE TO OUR VETERAN PATIENTS.

I IMPLORE YOU TO DO EVERYTHING IN YOUR POWER TO RESIST THE WRONG HEADED PROPOSALS OF THE APPRORPRIATIONS COMMITTEES. DM&S AND ITS VETERAN PATIENTS WILL ONLY SUFFER WITH A MID-COURSE CHANGE IN ADP DIRECTIONS. DM&S IS TOO FAR ALONG AND TOO FAR BEHIND ITS COUNTERPARTS IN THE PRIVATE SECTOR TO BE ABLE TO TOLERATE SUCH A UNNECESSARY AND UNWISE ALTERNATIVE.

THANKS YOU FOR YOUR CONSIDERATION OF THESE PERSPECTIVES.

SINCERELY,

JOHN HEMPEL
N11729 FAIRWOOD DR.
SPOKANE, WA. 99218

STANFORD UNIVERSITY SCHOOL OF MEDICINE

STANFORD, CALIFORNIA 94305

Department of Pathology

April 3, 1987

Honorable G.V. (Sonny) Montgomery
Chairman, Committee on Veterans' Affairs
House of Representatives
Washington, D.C. 20515

Dear Mr. Montgomery:

I wish to strongly advise the continued implementation and vigorous support of the Veterans Administration Decentralized Hospital Computer Program:

1. Despite some faults, it is a well-designed system.
2. We've already invested very considerable time and energy in the implementation of this system.
3. Switch to another system would substantially delay the already tardy introduction of computer use in our hospital.
4. The delay (of an estimated 5 years) would not only be expensive and demoralizing to our staff, but may, because of personnel shortages, impair the delivery of medical care to veterans patients at this institution.
5. The merits of the other systems being proposed have yet to be demonstrated superior to the present systems and their cost, as I see it, is not likely to be substantially different.

I respectfully request your consideration of these factors, and I very much hope you will see fit to discourage a changeover in data processing systems at this time.

Sincerely,

Jon C. Kosek, M.D.
Professor, Clinical Pathology
Stanford University School of Medicine
Stanford, California 94305

JCK/dlb

APR 2 1987

March 23, 1987

Honorable G.V. (Sonny) Montgomery
Chairman
Committee on Veteran's Affairs
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I have just learned of the possibility that funds for continuation and enhancement of the Veterans Administration's Decentralized Hospital Computer Program (DHCP) are at risk. As Chief of Staff at the San Francisco Veterans Administration Medical Center, I have more than a passing interest in this unwelcome development, and as a citizen I feel obliged to pass on to you my concern. I plead that this program not be dismantled or discontinued.

I can certainly appreciate, and in fact I applaud, your desire to help the Veterans Administration to have the best system at the lowest cost to meet the needs of the Medical Centers for management of information. It is only within the last few years that the VA has been able to enter the Information Age, and predictably the effect has been exceptionally salutary. Although we are still behind the private sector in some ways, we now can obtain prompt clinical and administrative data. For example, instead of depending on hand delivery of laboratory reports to each ward and to each clinic, physicians can obtain results directly from a video screen. Furthermore, they can quickly detect trends or changes from previous values because all data from each patient are displayed in a tabular format. This represents an enormous advantage for quality of care because each result is displayed on the screen as soon as the analysis is completed. In a similar fashion, the Pharmacy module permits each physician and pharmacist to see at a glance all the medications a patient may be receiving from different clinics and thus be alert for potential interactions between medications. On the administrative side, we now have the ability to schedule patients for clinic visits, to check eligibility, to manage scheduling of special tests such as X-ray procedures, and to monitor funds, personnel, and supplies. These represent only a few examples of what can be done now. All of the above may seem simple, but none could be accomplished satisfactorily before the DHCP. It would be a tragedy and a real blow to morale if our slow, but steady, advance were halted in the name of a better system to be obtained at some future date.

I urge, no matter what the long-term solution may be, that the DHCP not be terminated or prevented from progressing. I have not seen any detailed comparisons of the DHCP with other, commercially available hospital systems, but each such system must have strengths and weaknesses. While certainly far from perfect, the DHCP has been developed with the "blood, sweat, and tears" of many VA personnel. They have labored long and hard through Special Interest Users Groups to meet the expressed needs of our Medical Center staffs, have made corrections and changes as needed, and by and large they have succeeded.

I have not attempted to cover all aspects of our joy at having a DHCP, but I am sure you can gather that it has been welcomed greedily. Obviously, I hope that no change will be made unless there is a clear improvement in performance, cost, or both. If it appears that a change must occur, I hope that it will be possible to maintain and continue moderate enhancements to our existing system during the inevitably long and tortuous procurement process. In fact, it is absolutely essential that no obstruction to our current capability be imposed, or we risk both a serious morale problem and a potential impairment of our ability to provide high quality patient care. We are now dependent on the DHCP and cannot do without it until a new system is ready for full implementation. I urge that you assist the VA in these efforts.

If I may be of any service, such as by providing additional information or documentation, I shall be pleased to cooperate in any way possible.

Sincerely,

Ralph S Goldsmith

RALPH S. GOLDSMITH, M.D.

April 3, 1987

Honorable G.V. (Sonny) Montgomery
Chairman, Committee on Veterans' Affairs
House of Representatives
Washington, D.C. 20515

Dear Mr. Montgomery:

I understand that you are re-evaluating the merit of adapting the DHCP computer system for patient care in the Veterans Administration. The purpose of my writing is to affirm my support for the DHCP computer system. My colleagues and I have spent many years learning and using the DHCP. We found it to be a very effective, efficient and relatively inexpensive system for the Veterans Administration. Actually, the DHCP has been up and running in many Veterans Administration Medical Centers.

We all feel that user satisfaction is high, and the training of all the staff in my laboratory has been easy and successful.

To start a new computer system takes several years. A major problem is the interruption and damages to the patient care if we abruptly put the DHCP away. Therefore, I urge you to continue to support the DHCP system during the transition, if a switch does occur.

Sincerely yours,

Lawrence F. Eng, Ph.D.
Chief, Chemistry Section,
Laboratory Service (113)
Veterans Administration Medical Center
Palo Alto, California 94304

LFE/dlb

[illegible]

Veterans Memorial Building
Room 123
San Francisco, CA 94102

Honorable G. V. (Sonny) Montgomery
Chairman, Committee on Veterans' Affairs
House of Representatives
Washington, D.C. 20515

Dear Congressman Montgomery:

Please be informed that an extremely important matter has arisen concerning the funding of the DHCP computer system now being used by the VA, pending a decision to replace it with another system.

Unless the DHCP is funded for use right up until the last minute before it is replaced, it will not just be the false economy of changing horses in mid-stream, but will result in a break-down in the delivery of health care by the VA to Veterans which will be dire.

Although I am writing as a private citizen and a concerned disabled Veteran, I can speak from long experience in attending the needs of Veterans on the local, state and national levels.

Sincerely yours,

Lino C Zamacona

Lino C. Zamacona
Past Department Commander
Disabled American Veterans

Medical Center

4150 Clement Street
San Francisco CA 94121

Veterans
Administration

March 23, 1987

In Reply Refer To: 662/11E

G.V. (Sonny) Montgomery
U.S. House of Representatives
Chairman, Committee on Veterans' Affairs
335 Cannon House Office Building
Washington, D.C. 20515

Dear Mr. Montgomery:

In my role as Chief of Information Resources Management at the VA Medical Center, San Francisco (Fort Miley), it has come to my attention that there is Congressional interest in a major change in the computer sytems that will be used to manage the VA medical centers. Let me assure you that any radical departure from the current DHCP program will spell disaster for the local VA stations (and I suspect for the VA Central Office).

Like all complex computer-based data management systems, the DHCP system has its problems; but fundamentally, it is a sound system with enormous potential that can only be realized through the experience that will be gained as a consequence of its continued implementation and evolution. The amount of effort that has gone into the training of personnel, the creation of data structures, the planning of projects and the establishment of a long-term record of the VA's patient-care and administrative experience is enormous. During these activities, much has been learned about how best to exploit the potential of DHCP for the benefit of medical administration and patient care activities. Any sudden shift to a new system or delays in planned equipment purchases for FY 88 will create havoc that will result in serious dislocations in the operations of local VA stations. For example, in the area of fiscal management, it has taken our station hundreds of hours of personnel time to train the staffs of a number of Services in the use of IFCAP, the software that enables the Station to order supplies, track these orders and encumber the funds required for their purchase. A significant database has been developed which has considerable importance for the responsible fiscal management of the Station. A sudden elimination of the support (including FY 88 purchase of equipment) for this activity would have consequences that I'm sure are obvious to you. As an example, in the area of patient care management we have developed software and programs that permit the more accurate monitoring of the complications of surgical procedures to assure that all possible steps are taken to minimize the risks of surgery to our patients. This program is being expanded to include the more accurate summarization of medical records for use in patient care evaluations. The locally developed software would not have been feasible in the absence of an exhaustive body of software developed as part of the DHCP. A considerable effort already has been expended on the programming tasks and the training of personnel, all of which would be lost with the sudden shift to a new system. Moreover, full implementation of the program will not be possible if FY 88 purchases are delayed. I could provide you with numerous other examples with similar consequences should you desire them.

It also should be pointed out that a number of very important DHCP pilot projects are in a critical stage of their development. The IFCAP software that was referred to above is an example. A great deal has been learned about the potential of this system over a period that spans several years. The system is just about ready for overall distribution within the VA patient-care network. What is to become of all of the effort and money that has been expended to develop a fiscal management system that is designed to save money and improve operating efficiency?

Before dismissing this letter as a self-serving attempt on the part of a VA employee to preserve the status quo, I would like you to be aware of the fact that, at the local level, I have voiced consistently my reservations about many elements of the DHCP software and implementation. However, at no time did I consider the solution to be one of dismemberment, but rather one of modification and evolution. I accepted my current position 18 months ago, because I realized the considerable potential of this system for medical administration and patient-care related research. I remain convinced that my initial assessment was accurate.

In closing, let me assure you that I believe that it would be fiscally and managerially irresponsible to undertake the delays and/or changes that appear to be contemplated. The responsibilities of Congress and the needs of Veterans would be served far better by a continued critical review of the DHCP and the provision of the resources required for its proper and healthy evolution.

Sincerely yours,

Ira B. Tager, M.D., M.P.H.
Chief, Information Resources Management Service

Associate Professor of Medicine & Epidemiology
University of California, San Francisco

cc:
John W. Ditzler, M.D.
Medical Center Director

Ralph S. Goldsmith, M.D.
Chief of Staff

U.S. Senator Alan Cranston
Chairman, Committee on Veterans' Affairs

Medical Center

4150 Clement Street
San Francisco CA 94121

Veterans
Administration

March 24, 1987

In Reply Refer To:

Congressman G. V. (Sonny) Montgomery
U. S. House of Representatives
Chairman, Committee on Veterans' Affairs
335 Cannon House Office Building
Washington, D.C. 20515

Dear Mr. Montgomery:

I presume by this time your office has received a letter written by my Chief of Information Resources Management Service dealing with his concerns about the DHCP program. Dr. Tager outlines from a practical point of view some real concerns. I am not certain of the proper method of communication in this matter, and am therefore taking advantage of the opportunity of my past contacts with you to add my additional concerns.

It is not unreasonable to believe that in today's computer technology that there are many equally fine competing companies and technologies. It is no surprise to me that some of the individual hospital systems studied are also of considerable value. The main problem of an extensive system such as the VA requires, is the time necessary to develop credibility, the bodies necessary to be trained and to train employees; and more particularly, time to iron out any "bugs" of a new system and then to proceed in a manner most adaptable to the individual peculiarities of that system. This then, the VA has successfully done with the current DHCP. I believe with Dr. Tager, that delay in continuing the program could well set the VA backward a decade. I believe this matter to be so serious that I jeopardize the usual protocol procedures in order to bring this additional information to your attention.

Sincerely,

JOHN W. DITZLER, M.D.
Medical Center Director

cc: Senator Alan Cranston
Chairman, Senate Veterans' Affairs Committee

"America is #1—Thanks to our Veterans"

Medical Center

4150 Clement Street
San Francisco CA 94121

Veterans
Administration

March 23, 1987

In Reply Refer To: 662/11E

G.V. (Sonny) Montgomery
U.S. House of Representatives
Chairman, Committee on Veterans' Affairs
335 Cannon House Office Building
Washington, D.C. 20515

Dear Mr. Montgomery:

In my role as Chief of Information Resources Management at the VA Medical Center, San Francisco (Fort Miley), it has come to my attention that there is Congressional interest in a major change in the computer sytems that will be used to manage the VA medical centers. Let me assure you that any radical departure from the current DHCP program will spell disaster for the local VA stations (and I suspect for the VA Central Office).

Like all complex computer-based data management systems, the DHCP system has its problems; but fundamentally, it is a sound system with enormous potential that can only be realized through the experience that will be gained as a consequence of its continued implementation and evolution. The amount of effort that has gone into the training of personnel, the creation of data structures, the planning of projects and the establishment of a long-term record of the VA's patient-care and administrative experience is enormous. During these activities, much has been learned about how best to exploit the potential of DHCP for the benefit of medical administration and patient care activities. Any sudden shift to a new system or delays in planned equipment purchases for FY 88 will create havoc that will result in serious dislocations in the operations of local VA stations. For example, in the area of fiscal management, it has taken our station hundreds of hours of personnel time to train the staffs of a number of Services in the use of IFCAP, the software that enables the Station to order supplies, track these orders and encumber the funds required for their purchase. A significant database has been developed which has considerable importance for the responsible fiscal management of the Station. A sudden elimination of the support (including FY 88 purchase of equipment) for this activity would have consequences that I'm sure are obvious to you. As an example, in the area of patient care management we have developed software and programs that permit the more accurate monitoring of the complications of surgical procedures to assure that all possible steps are taken to minimize the risks of surgery to our patients. This program is being expanded to include the more accurate summarization of medical records for use in patient care evaluations. The locally developed software would not have been feasible in the absence of an exhaustive body of software developed as part of the DHCP. A considerable effort already has been expended on the programming tasks and the training of personnel, all of which would be lost with the sudden shift to a new system. Moreover, full implementation of the program will not be possible if FY 88 purchases are delayed. I could provide you with numerous other examples with similar consequences should you desire them.

It also should be pointed out that a number of very important DHCP pilot projects are in a critical stage of their development. The IFCAP software that was referred to above is an example. A great deal has been learned about the potential of this system over a period that spans several years. The system is just about ready for overall distribution within the VA patient-care network. What is to become of all of the effort and money that has been expended to develop a fiscal management system that is designed to save money and improve operating efficiency?

Before dismissing this letter as a self-serving attempt on the part of a VA employee to preserve the status quo, I would like you to be aware of the fact that, at the local level, I have voiced consistently my reservations about many elements of the DHCP software and implementation. However, at no time did I consider the solution to be one of dismemberment, but rather one of modification and evolution. I accepted my current position 18 months ago, because I realized the considerable potential of this system for medical administration and patient-care related research. I remain convinced that my initial assessment was accurate.

In closing, let me assure you that I believe that it would be fiscally and managerially irresponsible to undertake the delays and/or changes that appear to be contemplated. The responsibilities of Congress and the needs of Veterans would be served far better by a continued critical review of the DHCP and the provision of the resources required for its proper and healthy evolution.

Sincerely yours,

Ira B. Tager, M.D., M.P.H.
Chief, Information Resources Management Service

Associate Professor of Medicine & Epidemiology
University of California, San Francisco

cc:
John W. Ditzler, M.D.
Medical Center Director

Ralph S. Goldsmith, M.D.
Chief of Staff

U.S. Senator Alan Cranston
Chairman, Committee on Veterans' Affairs

MAR 25 1987 MAR 27 1987

347 Millaudon St.
New Orleans,La.70118
March 20,1987

The Honorable G.V.(Sonny) Montgomery
U.S.House of Representatives
2184 Rayburn House Office Building
Washington,D.C. 20515

Dear Sonny:

It is rumored that there are pending proposals to withhold funds intended for the Veterans Administration Decentralized Hospital Computer Program (DHCP). Such a move would set the V.A. health care back for years. The V.A. has been behind other health care systems and is only now getting its programs activated on-line with considerable improvement in patient care management. Any cessation or delay would have a serious impact on direct patient care.

Now, with DHCP it is possible to control and expedite patient scheduling ; permit physician determination of all medications a patient is receiving and thus control duplication and costs; transmit laboratory results to clinics and wards without extended delays; track patient admissions and clinic appointments for both patient care and response to inquiries from Congress or other legitimate sources; determine eligibility; calculate appropriate lengths of stay for each diagnosis as a guide to most efficient and quality care; compare cost data and use to correct inefficient procedures , and many other uses to improve patient care and hospital management.

Interruption in the use or expansion of the DHCP would have a drastic negative impact on management and morale after waiting so long for a functioning system and then to have it placed in a stagnant or regressive state.

Thank you for taking the above benefits into consideration and for your assistance in the progression and expansion of the V.A. Decentralized Hospital Computer Program.

Sincerely,

Sam A. Threefoot,M.D

STATEMENT OF

JOHN A. GRONVALL, M.D.

CHIEF MEDICAL DIRECTOR

DEPARTMENT OF MEDICINE AND SURGERY

VETERANS ADMINISTRATION

BEFORE THE SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE

COMMITTEE ON VETERANS' AFFAIRS

HOUSE OF REPRESENTATIVES

APRIL 8, 1987

The Department of Medicine and Surgery is pleased to have this opportunity to present testimony about our progress in making the Decentralized Hospital Computer Program (DHCP) a nationwide reality. From its inception, DHCP has been a remarkable success story -- DM&S has installed state-of-the art integrated systems in 223 health care facilities since March 1984. Prior to that time there were virtually none. The computer has become a necessary element of modern hospital operations and an essential resource to a hospital manager. Placing the responsibility for local implementation and daily operation with each health care facility director has been a key element of our success.

Health care both within the government and in the private sector has experienced significant changes in the last five years. Health care delivery is a dynamic and changing process, and in this the local health care provider must be able to respond quickly to both individual patient needs and increased management challenges. These changes are seen not only in the use of increased technology in the direct delivery of patient care, but also in the rapid implementation of productivity measures such as DRG's and case/mix models. It is no longer acceptable clinical practice to wait hours for a laboratory result to be hand delivered to a ward or outpatient care unit when this same result can be available within minutes using automation.

Neither VA providers nor our private sector counterparts would be able to meet these changing needs of medical care without significant automation support which allows medical staff to determine all medications a patient is receiving, transmit laboratory results to wards and clinics without extended delays, and rack patient admissions. On my visits to our medical centers one of the biggest demands is for more computer equipment so that radiology results can become as readily available as other test results; so that charts can be tracked and be made consistently available when the patient is seen; and so that time spent on preparing necessary reports can be reduced. The implementation of the DHCP applications which will provide this kind of operational support will also have an even more important impact. It will give providers more time to take care of the veteran patient.

This is cost effective support of patient care: Providing the needed information to the medical care staff as soon as possible. It avoids ineffective treatments, duplicate orders and increases the likelihood that the patient will be out of the facility sooner.

The establishment of the DHCP patient data base allows providers at the local level to compare cost data and use this data to correct inefficient procedures as well as find more economical, quality methods of providing care. All this is possible because of the DHCP File Manager, a data base management tool, available at every facility. There are many other applications for this standard tool -- to implement programs; to improve patient care; and to enhance facility management. I am pleased to report that this is taking place. At our recent Associate VAMC Director's meeting, several innovative displays were presented which demonstrated the use of DHCP File Manager to improve local management decision making and to monitor quality of care. Domestic and foreign organizations are beginning to recognize the usefulness of these DHCP applications as evidenced in the mounting requests for DHCP software under the Freedom of Information Act (FOIA) and in the private publication of "how to" manuals on the use of this public domain software.

The ambitious DHCP program, was conceptualized in 1982 and equipment deliveries began in 1984. To date, DHCP systems that support Medical Administration, Pharmacy and Laboratory functions have been installed at 164 VA medical centers and 59 satellite outpatient clinics. To put this accomplishment in perspective, three years ago DM&S had only a handful of hospitals with any automation and only one whole hospital pilot project. Today we are operating the largest number of the most standard and integrated medical computer systems in the U.S. This has catapulted the VA into the lead in automation of health care facilities, by providing a unified and integrated patient data base and an easy to use data base management system.

I believe that DHCP is a sound system that delivers the functionality specified and required by our medical center end-users. Because we view automation as a tool in the delivery of health care and because we wished to put this tool into the hands of our providers as quickly as possible, we have taken some short cuts.

Certain refinements commonly offered by commercial vendors (such as more sophisticated terminal outputs) were judged to be not required; elaborate management and planning mechanisms were not in place before computers were installed. For this we have been criticized, and I am willing to accept these criticisms. Nevertheless, DM&S has recently taken positive action to meet the concerns that have been expressed regarding DHCP by various oversight agencies during their evaluation of this massive nationwide implementation effort. But I cannot say that I regret having given hard pressed and dedicated staff automation support to make their jobs easier. DM&S has succeeded, but rather than rest on our laurels, we are doing all we can to address the areas where improvements are indicated.

As the first of these improvements, the Administrator has approved the reorganization of the Medical Information Resources Management Office (MIRMO) in VA Central Office and our seven regional Information System Centers (ISC). This will strengthen the national direction of DHCP development and implementation, and will assure that all program resources are accountable and focused on the same strategic plan. Another significant improvement was the design of a new computer model to specify systems which better reflect the automation needs for each of the medical centers. This model is based upon workload as well as other characteristics such as physical descriptions of the health care facilities.

In the area of quality control, additional staff to support the testing and documentation needs of DHCP have been given each Information System Center. Stringent new testing and documentation standards have been developed and will be utilized in DHCP. Finally, to more closely monitor the installation of software in the operational environment at each health care facility, we have installed a national automated tracking system on our electronic mail computer at the Washington ISC. Each local DHCP site manager will update this system on a regular basis, and the status information will be monitored at the regional and national level.

During this same time three facilities were selected to have commercial systems installed to determine what could be learned about their feasibility or applicability in a VA environment. These three IHS sites were at Philadelphia, PA, where an SMS system was installed, at Saginaw, MI where an McDonnell Douglas system was installed and at Big Springs, TX where an EDS system was installed. The users have generally been satisfied with the support provided by these systems, but each system required substantial modification before it could be used. Communication with central systems has proven to be a problem, and the VA is in the process of procuring a small DHCP system for these sites so that they can interact with central systems such as the TARGET hospital inquiry application, which is the DHCP interface with our Department of Veterans Benefit computer systems. The cost of these commercial systems has also been significantly greater than those of DHCP.

DHCP is a not a static computer system, as were the systems installed in the DM&S prior to 1982. It is rather a dynamic modular system, designed from inception to have flexibility. DHCP has been able to meet congressionally mandated changes such as those recently seen in MAS, has been able to meet local health care facility needs and establish a base for meeting the summary information needs of local, regional and central management.

It is my belief that DM&S should proceed with DHCP enhancements approved by OMB and Congress. I base this on the strong acceptance of DHCP among VA users, on our commitment to continue to improve the program management and on the conclusions of several external reports. Price Waterhouse found DHCP to be cost effective. Booz-Allen found that DHCP cost less than half of similarly designed private automation systems based on a 10 year life cycle.

During the last three years, DM&S has established a trained user base of administrative and clinical staff at great cost and effort to the individual facilities. I am exceedingly proud of those health care providers who have spent innumerable hours making sure that DHCP met their needs, and assisting in the implementation of modules at their facilities. This base should be built upon, not dismantled. An interruption in use or expansion of DHCP would have a very negative impact upon management effectiveness, morale and the quality of health care delivered at the health care facilities.

There has been much discussion of the ability of DM&S to retain and recruit ADP personnel, especially those trained in the MUMPS language. Granted some senior staff have left the agency, primarily to work on the DoD/TRIMIS version of DHCP. In 1982, when the Department embarked upon the DHCP program, it was estimated that there were fewer than 50 qualified MUMPS programmers in the VA. Currently there are over 300 MUMPS programmers.

Retention rates of programmers are similar to those experienced in the private sector, where significant turnover of trained ADP staff occurs. The VA is however experiencing satisfactory recruitment at the beginning programmer level, and is retaining these young programmers for several years. An in-residence training program which will recruit 10 Information Resource Management trainees each year has recently been inaugurated and is expected to have a positive influence on our future site management needs. There is also our hidden asset of full-time health care providers, who in their own time have learned the use of the DHCP File Manager and are using these tools to augment their personal effectiveness in providing health care.

As a manager of health care providers, I am looking forward to the Enhanced phase of DHCP, where additional clinical modules are implemented at every facility and the DHCP-based Decentralized Medical Management System is installed.

I would welcome your visit to our sites and see for yourself the impact that DHCP automation is having on the care of our veterans. I believe you will share my enthusiasm.

DHCP COST ESTIMATES

Year	Number of Applications	Life Cycle	Costs
1983	6	7 Years	$155 Million
1984	8	8 Years	$203 Million
1985	24	8 Years	$501 Million
1986	36	10-17 Years	$1,176 Million
1987	18	10 Years	$777 Million

IHS COST ESTIMATE

1987	18	10 years	$1,490 Million

STATEMENT OF DAVID A. COX

ASSOCIATE DEPUTY ADMINISTRATOR FOR MANAGEMENT
VETERANS ADMINISTRATION
BEFORE THE
HOUSE COMMITTEE ON VETERANS AFFAIRS
APRIL 8, 1987

Mr. Chairman and Members of the Committee, the Chief Medical Director and I are pleased to appear today on behalf of the Veterans Administration in response to the request of Mr. Montgomery.

Historically, VA has been a leader in the use of ADP technology to automate the administrative reporting and administrative functions inherent in managing a large Federal agency. Over the last five years, information processing technology has become economical enough to change the emphasis from large central computers to an environment where each operating Department can use specialized ADP systems to improve operations at the point of contact with the veteran. As a result the VA is moving into an ADP environment which uses a distributed data processing architecture. This architecture provides computer capability at all field stations, ties the field stations and Central Office together with an integrated telecommunications utility and enables all levels of the organization to use and share information to provide better service to the veteran. Distributed data processing supports and integrates the management philosophy used by the VA -- decentralized operational management with centralized management policy and financial control.

The interdependencies among systems are significant because these systems directly affect the quality of service the VA can provide to veterans.
For example in December we provided the capability for any medical center to inquire directly into the Department of Veterans Benefits eligibility files to determine eligibility for the Means Test. During the first week of operation, there were 2,000 inquiries; last week there were 37,000 inquiries. We expect

this number to be at 60,000 inquiries by June. This capability connects DEC, Honeywell and Amdahl computers to solve our Agency-wide problems. Because of this interdependency, it is essential that each Department and staff office acquire and develop systems which fit within the defined framework of the distributed processing architecture.

In direct support of departmental programs, the Agency has developed management policies that ensure the most effective use of ADP and telecommunications support services. The VA ADP management policies are:

- To delegate authority and responsibility to the Departments for the management of operational ADP systems that directly affect the delivery of service to veterans.

- To provide centralized direction from the Administrator's office for the Agency's management and financial control systems.

- To integrate departmental operational systems with centrally directed management and financial control systems so that all users can access common data for effective management.

- To determine the effectiveness of existing and proposed systems to meet program needs in the most cost efficient manner through a formal planning and evaluation process.

These management policies were developed in recognition of the need for Departments to have more immediate control over the operating and managerial information necessary to improve service delivery to veterans, while at the same time providing the Administrator with the management and control systems necessary to meet his oversight and leadership responsibilities.

The top priorities for new computer applications are those that can improve the quality of service to the veteran, increase the productivity of VA personnel, and reduce the cost of providing essential services to veterans. In order to meet these priorities, VA has put computer systems in the field stations where they can directly improve the daily delivery of service to veterans. Moreover, these systems provide essential operating information to VA field personnel, when and where they need it, in order to improve operations and reduce costs.

Due to the scope and start-up costs for the VA hospital network, both in terms of equipment and development resources, implementation of the top priority applications were divided into two phases:

- Initial and full CORE to establish the patient data base and provide critical support in admissions, scheduling and discharges of patients and in pharmacy, and laboratory - two of the most labor intensive clinical areas.
- Enhanced DHCP which would complete support for clinical and administrative functions.

By November 1986, every VA hospital was using DHCP to support Initial CORE applications providing support in: Patient Registration, Admissions/Discharges/Transfers (ADT), Patient Scheduling, and Outpatient Pharmacy.

These functions make it possible for medical center staff to simplify patient registration; to admit, discharge, transfer and track patient status/location; to generate gains and losses, bed census reports, and ward rosters and to schedule patients (both inpatients and outpatients) for clinic appointments. In addition, Outpatient Pharmacy software enables staff to check drug interactions, to maintain patient medication profiles, to control drug inventory, and to produce prescription labels.

By the end of FY 1987, each hospital will have incorporated the Full CORE applications of Inpatient Pharmacy and Clinical Laboratory. Inpatient Pharmacy allows order entry for unit dose, ward stock, and intravenous (IV) additives from the appropriate areas of the hospital. Clinical Laboratory software permits test requests to be entered from the ward and test results to be produced in a variety of formats and to be routed to different locations.

The CORE applications form the starting point in enabling hospital staff to put together the information needed to run a facility more efficiently. This is a remarkable achievement - the VA in less than three years has procured systems, installed the hardware and software and trained tens of thousand of workers in over 168 hospitals nationwide.

However, in order to improve quality of medical care and meet the future management and cost control requirements of the VA medical centers, implementation of the DHCP Decentralized Medical Management System (DMMS) will be one of the top Enhanced DHCP priorities for future years.

The Decentralized Medical Management Systems (DMMS) is a management reporting system that operates on DHCP and provides automated tools for extracting, summarizing and transmitting operational data in a manner that is of value to both local hospital managers and Central Office decision makers. DMMS has a clinical orientation and integrates the physician into a hospital's total decision making process in a new and unique manner.

Each of the clinical applications is designed to improve medical care and service to the veteran as well as provide automated updates to DMMS running on the DHCP system. The following DHCP priority ranking supports the implementation of DMMS:

1. Radiology
2. Dietetics
3. Medical Records Tracking
4. Integrated Funds Control Accounting and Procurement
5. Surgery
6. Nursing
7. Mental Health

Funding for this project was provided in the FY 87 Congressional Appropriations. A Request For Proposal (RFP) has been issued for upgrading the Central Processing Units (CPU) for medical center DHCP systems and to provide the additional capacity to support cost control and enhanced applications.

The accounting firm of Price-Waterhouse performed a prospective investment analysis on nine top priority Enhanced DHCP applications. Their analysis shows a 9.8 percent rate of return to the Government on funds required to support these new applications to include DMMS.

In 1983 DM&S initiated the Integrated Hospital System (IHS) program based on Congressional guidance to evaluate the ability of the private sector to provide functional and cost effective hospital information systems to meet the information needs of the medical center. The IHS is a prototype demonstration of the applicability of commercially available hospital information systems to the VA medical center environment. The VA is evaluating the suitability of using off-the-shelf data processing systems at three medical centers which are representative of the broad range of types, segis and, missions of all VA medical centers. Philadelphia, PA (large) Saginaw, MI (medium) and Big Spring, TX (small). The IHS system acquired from commercial vendors through a competitive procurement process are comprehensive information systems. The system architecture (hardware and software) for the IHS prototypes varies from site to site.

The VA contracted with Booz, Allen & Hamilton to do a comparative assessment of DHCP and IHS. The scope of the study was to those applications known as CORE (Medical Administration, Pharmacy, and Clinical Laboratory), plus the eight highest priority and approved DHCP applications: DMMS, Radiology, Records and Tracking, Dietetics, Surgery, IFCAPP Fiscal and Supply, Nursing, and Medical Health. These were the same applications that these IHS vendors were asked to install. The life cycle costs for those applications covered the period from FY 1987 through FY 1996.

Cost-effectiveness comparisons were made for three sets of program requirements: information systems; system support services (i.e., system deployment, operations, and maintenance); and management support.
The DHCP alternative costs $777 million over 10 years versus $1.496 billion for IHS over the same period.

The Booz, Allen & Hamilton study team concluded that DHCP provides the best foundation for future VAMC information systems support but requires significant changes to ensure continued cost-effectiveness. Its primary strengths for the future lie in the characteristics that are the foundation of the current DHCP approach, namely; existing levels of VAMC-specific functionality; prototyping methodology for defining VAMC requirements under operational conditions; and ability for formally involving Special Interest User Groups (SIUGs) representing the spectrum of users in identifying, defining, and prioritizing application requirements. The Booz Allen study also recommended specific corrections to DHCP program deficiencies - all of which the VA is implementing.

The most central issue in the debate to decide between the two alternatives, DHCP or commercial systems, is the essential nature of the products that are required to deal with the reality of health care delivery. The reality is that VA medical centers are exceptionally dynamic. The ebb and flow of disease, medicine, and resources present a constantly changing Matrix. Health care information systems must meet the current needs, and evolve constantly to keep pace with the evolving needs in medical centers.

The commercial alternatives are for products with fixed properties. As the needs in the medical centers evolve, the commercial systems will expose the Agency to steadily increasing costs which are not entirely in the control of the Agency. The essential design of DHCP has been to construct the internal resources and organization to effectively manage the process of software evolution at a modular cost to the government.

In summary, the Veterans Administration has the resources, talent, and motivation needed to meet the requirements of the medical centers now and in the future.

DHCP COST ESTIMATES

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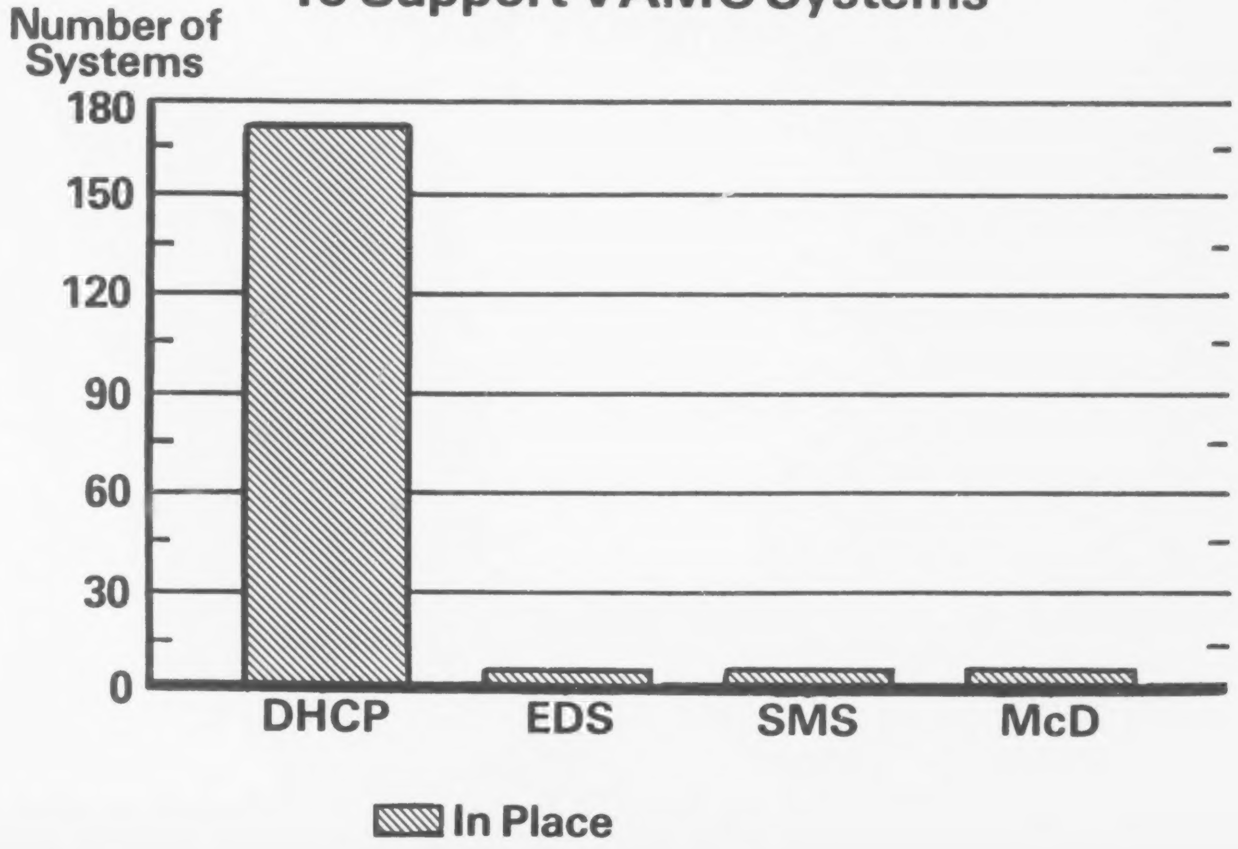
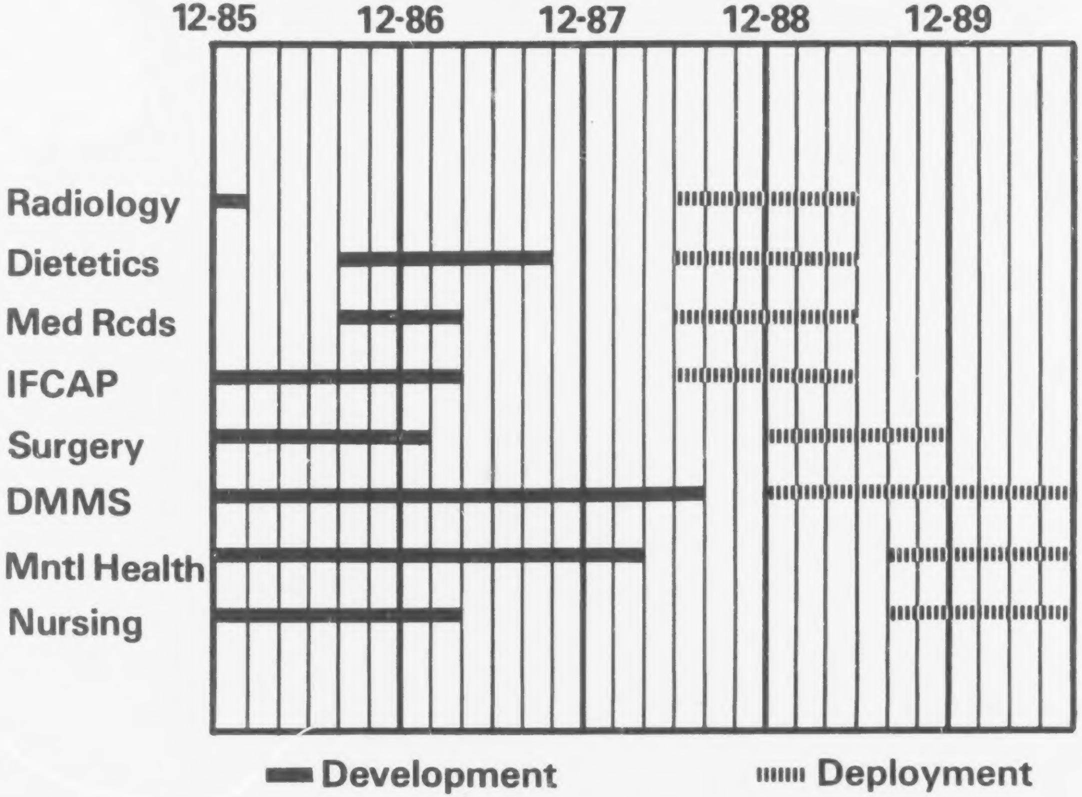
IHS COST ESTIMATE

1987	18	10 Years	$1,490 Million

INFRASTRUCTURE IN PLACE
To Support VAMC Systems



ENHANCED DHCP SOFTWARE
Development/Deployment Schedule



The following letter and analysis respond to issues raised by the House Appropriations Committee's Surveys and Investigations Staff report concerning VA medical computer programs.

Honorable Alan Cranston, Chairman
Committee on Veterans' Affairs
United States Senate
Washington, D.C. 20510-6375

Dear Mr. Chairman:

Thank you for the opportunity to respond to the issues raised by the House Appropriations Committee's Surveys and Investigations Staff in "A Report to the Committee on Appropriations, U.S. House of Representatives, on the Veterans' Administration Medical Computer Programs."

None of the criticisms in the Report is new; all have been raised in the past by reviewers and evaluators of DHCP and in all cases action is underway to correct the problems.

This report does differ from other reviews (by the Inspector General, Price-Waterhouse, Booz-Allen and Hamilton, and the General Accounting Office) in one major way. These other reviewers, although identifying specific deficiencies requiring remedies, all find that DHCP is, on balance, a useful program that serves the needs of the medical centers and the veterans who are treated there. All recommend continuation of the program.

Specific criticisms raised by the Report to the House Appropriations Committee, along with the Agency's corrective actions are:

> Issue: Lack of central management, leading to piecemeal development and the absence of a rational basis for estimating hardware and personnel requirements. Response: I approved a reorganization under which the Information Systems Centers (ISCs) report directly to the Medical Information Resources Management Office (MIRMO), which will give national direction to DHCP development and implementation, and assure that everyone in the program is working from the same strategic plan. MIRMO, with technical support from the ISCs, will now determine that hardware and software requirements are based on the OMB approved application requirements of the software and the workload of each medical center.
>
> Issue: The system as developed is not integrated and its subsequent integration will be a long and costly effort. Response: The DHCP system has been from its initial inception a totally technically integrated medical information system relying on a common data dictionary, data base management system, common utilities, system wide shared data files, programming standards and common database administration. Order Entry and Results Reporting features of various sections of DHCP are commonly gathered on one integrated menu using the Menu Management utility.

Issue: Flawed software was released without adequate documentation and without an implementation schedule. Response: All DHCP software released nationwide to date is required to pass a thorough Alpha test, a Beta test and a verification process. This includes the functional approval of the respective Special Interest Users Group (SIUG) who certify that the software meets their functional needs. Within the last twelve months, stringent standards have been introduced to require full testing (verification) and complete user and technical documentation before the release of any software. This will ensure a consistent high level of testing for all packages. Priorities for implementation are now established at the Agency level, and mandates issued as necessary to assure nationwide compliance.

Issue: There is inadequate user training. Response: Under the guidance of a national training committee, a wider range of vehicles to provide for training is being made available. These low cost vehicles include teleconferences, stereo tape systems, and Computer Aided Instruction (CAI), and will be used to supplement the current approaches that have been found most effective, such as our "train the trainer" program.

Issue: There are personnel and recruitment difficulties. Response: The VA is suffering the same personnel recruitment difficulties as many corporations in the private sector experience with trained ADP personnel, and turnover rates are similar. The VA has over 2000 computer specialists nation wide and over 500 in the Department of Medicine and Surgery. However, recruitment is satisfactory at the beginner programmer level, and we are aggressively training a cohort of bright and motivated junior programmers. We have also instituted the Information Resources Management Training Program, a residency program for training site managers. We had a strong field of applicants for the program this year and selected ten applicants on the basis of experience and management potential.

The Report also states that the VA has not given the commercially available off the shelf hospital information systems a fair test in the Integrated Hospital Systems (IHS) program.

Issue: The implementation schedule for IHS was unrealistic. Response: This schedule was part of the original RFP against which the vendors bid and was accepted by each of them as part of their contract. During the same time period that each vendor was implementing a system at only one site, the VA was implementing systems at 164 DHCP sites.

Issue: DM&S support for the IHS tests was monetary only; little staff support was supplied. Response: There was a VA site manager for each of these systems (the same as in DHCP); other staff support was supplied as needed at the hospitals. Project management in MIRMO, though present throughout the test, was admittedly more intensive in the earlier stages of the IHS project, when they were getting off the ground. Most importantly, the VA contracted with Arthur Anderson for the site by site monitoring throughout the test.

Issue: Rational "test" or evaluation methodology was absent. Response: The Booz-Allen and Hamilton report evaluated IHS by comparing it with DHCP. Booz-Allen, a recognized expert in the field, used the same evaluation methodology that they have used in conducting hundreds of similar studies.

Issue: Cost estimates for installing commercially available systems are not realistic. Response: These estimates were not produced by the VA, but by the national firm of Booz-Allen. The primary data sources used by Booz-Allen to produce these estimates were cost and pricing data from existing contracts that VA has with each of the vendors.

Issue: There is no reasonable basis on which to compare the costs and capabilities of IHS with the DHCP. Response: Booz-Allen used the VA's requirements, as defined by top management and specified by the VA medical user community, as a baseline for comparing cost effectiveness over a period extending ten years into the future. The success of the two systems in meeting the users' requirements was analyzed. Scenarios explaining how the requirements would be met over a ten year life cycle were developed, broken into resource components, and costed. The result - which found that IHS cost twice as much as DHCP for comparable functionality - is an honest and realistic comparison of the two systems.

In summary, the Decentralized Hospital Computer Program is already integrating clinical and administrative information required for patient management and sending that information to central management information systems. Additional management information will become available through the Decentralized Medical Management System, which counts and summarizes the procedures applied to patients and reports them in a form which supports medical and management decision making.

DHCP is a sound system that delivers the functionality specified and needed by users. Actions currently under way will tighten the central management and accountability of the program, enhance the integration from the user's perspective, and substantially improve quality control, documentation, and user training. Furthermore it will do so at significantly less cost than off the shelf commercial systems.

Our detailed analysis of the issues raised in the report is attached. I welcome the opportunity to provide this information to you and will be pleased to answer any additional questions about DHCP.

Sincerely,

THOMAS K. TURNAGE
Administrator

Enclosure

Analysis of
"A Report to the Committee on Appropriations
on the Veterans Administration Medical Computer Programs"

March 1987

Issue 1. It has been said that the lack of central management is a Decentralized Hospital Computer Program (DHCP) problem.

Discussion: The DM&S Medical Information Resources Management Office (MIRMO) has been reorganized to provide greater strength in program oversight on a national level. The first part of this reorganization was approved on December 19, 1986. The Information Systems Centers (ISC) now report to the Medical Information Resources Management Office, with oversight from the respective Regional Director. This will facilitate a national direction for the DHCP, and will enable the Program to move forward in a manner which is coherent and cohesive and consistently reflects the Department's system-wide plans and priorities. The realignment of the ISCs under the line authority of MIRMO and the establishment of the Director of MIRMO as Chairman of the ISC Council will serve to strengthen the project management and accountability on issues of national significance, while retaining in the regions and the medical centers the necessary degree of control over matters more appropriately addressed at these levels.

Along with the reorganization of MIRMO, a Program Management Review Group (PMRG) was formed to provide ongoing field input. The purpose of the PMRG is to evaluate the DHCP activities; propose Service objectives for FY 1987 and beyond; and evaluate the current organization and suggest modifications to improve efficiency. The PMRG is comprised of two representatives from each region (one from the ISC and one representing the medical center site management). Representatives include large and small medical center site management, hardware technical experts, DHCP Core software development staff, ISC director and associate director, ISC user support staff and individuals with technical background in clinical services and personnel.

The PMRG has reviewed both external and internal studies about DHCP and determined opportunities for improvement. Some of these documents included the A.D. Little report, the Price Waterhouse Post-Implementation Evaluation of Initial CORE, the Inspector General Review of DHCP, VAMC Site Manager's Conference proceedings and others. In addition, the PMRG was asked to survey medical center site managers and provide any additional DHCP issues. Issue categories have been identified and are the subject of continuous review. Recommendations for action have been made and action/assignment follow-up lists are being developed to both manage and track the resolutions to conclusion.

Work has also begun on the implementation of a DHCP project tracking system for oversight management of DM&S information resources. MIRMO is utilizing a contractor to prepare specifications for a tracking system. The tracking system is to be used as a management tool within the DHCP/IRM structure, where the concern, from a national perspective, is consistent progress toward Departmental development and implementation objectives. The system will include, but not be limited to, tracking national software development, hardware issues, and program management issues. Major areas of emphasis are monitoring progress of a given task relative to established milestones, and the implementation status of DHCP applications at medical centers.

Issue 2. In 1983, the VA decentralized DM&S ADP programs, moving responsibility for the planning, direction and control of DM&S ADP programs from MIRMO to the Regional Directors, thereby reducing the role of central management.

Discussion: The Decentralized Hospital Computer Program was designed to support the field elements of DM&S. The first step was to provide this support for the critical need areas in the VAMCs (MAS, Pharmacy, Laboratory) by

- o procuring and deploying equipment, and
- o developing and deploying software.

Under the decentralization concept, the various responsibilities for planning, direction and control rest with different entities at different levels of the DM&S organization. A major focus of the Program was the deployment of equipment and implementation of systems at the VAMCs. These activities required intensive coordination at the Regional level. In recognition of this, the line authority over the Information Systems Centers was transferred from MIRMO to the Regional Directors in a CMD Memorandum dated July 1983. This gave a great amount of responsibility to each region for the Program, and was effective in many areas in addition to system implementation, such as refining regional priorities for the implementation of DHCP modules on a nation-wide basis, implementing a system for facility ADP planning and preparation, and establishing regional ADP support priorities.

As the intensive system implementation phase neared completion, Program needs evolved into areas requiring national coordination, such as system refinement, fine-tuning, module interaction, software integrity, and standardization of day to day operations. To satisfy these needs, the DM&S Medical Information Resources Management Office (MIRMO) has been reorganized to provide greater strength in program oversight on a national level. While retaining in the regions and the medical center the necessary degree of control over matters more appropriately addressed at these levels.

Issue 3. The DHCP program is understaffed in VACO.

Discussion: In the critical stage of the DHCP when the first equipment was delivered and installed, DM&S headquarters received a substantial cut in its authorized personnel ceiling and jobs were abolished throughout DM&S Central Office. Although RIFs were avoided, the strength of offices was reduced. MIRMO (the office responsible for policy and oversight of DHCP) was substantially affected by this cut. The field is effectively under a similar Congressional restriction on the number of administrative personnel it can support and ADP personnel fall under this category.

Issue 4. The Agency depends upon a single FileManager developer, whose departure could seriously jeopardize the DHCP development due to its uniqueness in design.

Discussion: This is no longer true. In the period prior to DHCP and in its beginning phases, FileManager development was performed by a single individual, who went to great lengths to design a generalized tool that was in the public domain. As such, FileManager is currently implemented world-wide as a data base management system, report writer, data dictionary manager, data entry/editor statistical tabulator and programmer routines. When this developer left the VA to go work on the DoD TRIMIS project, the need for a VA FileManager development team was clearly identified, and currently the San Francisco ISC has established a three person FileManager team, which includes documentation support. Additionally, programmer development support for new FileManager functionality is being provided by the other ISCs. Examples include the development of Variable Pointers, Archiving and Formatted Screens.

Issue 5. Some critics state that DHCP is NOT an integrated Hospital Information System (HIS) and is just now addressing true integration of its various software modules.

Discussion: "Integration" as used by critics refers to the "apparent integration" as viewed by the user who may observe an "integrated" display or report or menu system that permits interaction with multiple applications or services whether or not the interaction involves orders for a patient.

This level of "apparent integration" often exists in a system that has very little real technical integration. In such systems, the "apparent integration" is achieved through substantial ongoing software programming efforts to develop and maintain interfaces between application modules often implemented on multiple vendors hardware systems.

In DHCP, we start with a totally integrated system - integrated technically by design. The integrated system-wide utilities known as the kernel, including VA FileManager, provides 4th Generation DBMS capabilities. Our DHCP programming standards and conventions and our database administration functions, provide DHCP systems with total real technical integration.

DHCP systems use a single integrated data dictionary, a single integrated data base, a single set of integrated system-wide utilities, etc. This commonality is the cornerstone of DHCP. Since all files and data reside in an environment under a common data base, retrieval of data from this integrated data base is much easier than any other method of data manipulation.

Issue 6. One description of a patient management system is an integrated clinical system that does not merely automate single clinical functions such as laboratory and radiology, but unifies orders and results, by patient, to form an integrated patient data base.

Discussion: DHCP fits that description quite well and better than any commercial system known to us at this time. DHCP puts a priority on obtaining from clinical and administrative users what their needs are. Once defined by users, meeting their needs is a relatively straightforward task because of the inherent technical integrated design of the DHCP system as well as the integrated system utilities of Kernel and FileManager. All shared data files are directly accessible to any computer program, and therefore integrated displays are as easy to produce as displays of data for any single clinical function. With a truly integrated data base like DHCP, no programmer has any need to deal with any complex hardware or software interfaces.

Issue 7. The following statement has been made about DHCP:

"Little concern is placed on integrating the modules; ISCs monitor their own development and schedules are loosely defined due to the lack of any established organizational schedule. Local, unique modules are developed at various hospitals because of the presence of an influential hospital official."

Discussion: Integration is, and has been, a major concern of the DHCP. From its inception, the overall systems design was built on modular applications development and a common patient database, common system-wide utilities (Kernel) and Filemanager DBMS.

From the beginning, the critical need for VAMC support was the driving force behind the DHCP. As rapid deployment activities placed equipment at the disposal of the VAMCs, the ISCs were working concurrently toward implementation of systems and conforming software developed in site-specific circumstances to fit the generic needs of all VAMCs for Admissions/Discharges/Transfers, Scheduling, and Outpatient Pharmacy and Laboratory and Inpatient Pharmacy. These priorities were already identified (CORE) and in place at the outset of the Program. The demand for immediate support in these areas of critical need was universally recognized and formally designated, and release dates of Initial CORE software were understood to be As Soon As Possible.

As the critical needs were met and the DHCP software base began to grow in size and complexity, a formal system for priority-setting for additional software development and for the coordination of release dates was instituted. Priority-setting beyond CORE was accomplished centrally to assure that the needs of VAMCs nationwide were addressed. The coordination of release dates became necessary to prevent the VAMC from being tasked with implementing two major software releases in too short a period of time.

Currently, information requirements appropriate to the prototyping method are developed by Special Interest User Groups (representation includes VAMC users and Central Office program management) and developers from the Information Systems Center which has been tasked with the development effort. Requirements are periodically reviewed by the SIUG, and user feedback is a prime consideration in refining existing software. The DHCP software development process is a joint effort involving MIRMO, the developing ISC, the SIUG,VACO program management, and the ISC Council.

Issue 7. (Continued)

The Information Systems Centers are tasked by the Director, MIRMO with assignments for development of priority national software and with providing support to the VAMCs within their region of responsibility. They are provided with centrally directed policy, guidelines, and standards and conventions which must be adhered to in the performance of their duties.

Priorities for software development and implementation are formulated by MIRMO, and approved by the Director for Operations and other Agency officials. The Director, MIRMO assigns these national priority development efforts to an Information Systems Center, based on current workload availability and experience of staff. The responsible ISC ensures the timely completion of software development. Target release dates are established by the ISC and SIUG, with MIRMO oversight. The status of software development is continually monitored and reviewed by MIRMO, the ISC Council and the SIUG, and written approval of the VACO program official is required before new version release of all national DHCP software packages.

Local, unique modules will continue to be developed at various hospitals because of the presence of available, competent development talent and the responsibility of the VAMC Director to prioritize local needs, rather than the presence of an influential hospital official.

Issue 8. Some have leveled the following criticism of DHCP:

"Although better than a manual system, the 'hooks and pointers' used to link the various modules represent neither current state-of-the-art, nor an optimal system. DHCP is slow, cumbersome, and demands high overhead in terms of computer capacity. The lack of integration in DHCP is its major deficiency."

Discussion: If the above is meant to reference the internal workings of DHCP, it is inaccurate for the following reasons:

- DHCP integration starts at the file design level.

- DHCP enforces standards (programming and verification) which dictate the policy of integration (e.g., no package would pass verification which created its own files where existing files would serve).

- DHCP uses the concept of Design Review to evaluate packages early in development for consistency with integration goals (e.g., Oncology was directed to redesign/rework due to creation of files/structures which should have referenced existing files).

- DHCP promotes frequent meetings among developers to discuss current activity and future direction to protect and foster our integration goals.

- DHCP does not duplicate data. Many commercial systems rely on separate systems which INTERFACE and build apparent integration. Such an approach has a high potential for divergent or colliding data.

A key issue here is the relationship of the terms INTEGRATE and INTERFACE.

- DHCP uses a consistent sign-on and menu presentation which gives the user a consistent view of the system.

- DHCP uses a standard set of shared/integrated files (e.g., Patient, Drug, User, etc.).

- DHCP offers the capability to construct meaningful menus for users which match the functionality/abilities of that user.

- DHCP offers the capability to quickly navigate among menu choices.

Issue 8. (Continued)

If the above is meant as an assessment of MUMPS and VA File Manager capabilities it is inaccurate for the following reasons:

o MUMPS has proven a viable and highly effective programming language in a wide variety of applications, and is particularly well suited for the VA's medical applications.

o The VA File Manager provides state-of-the-art relational capabilities for joining and extracting data from various files.

o MUMPS has inherent capabilities that make it faster in many circumstances, especially for data base access

o MUMPS is more efficient than other languages in the area of disk management. MUMPS uses B-trees which are scientifically proven to reduce the number of disk accesses needed to access desired data. Thus MUMPS is very efficient in retrieving data from the disk.

o MUMPS is VERY efficient in disk storage. MUMPS only allocates space for existing data. This is in contrast to other languages which reserve blocks of space on disks for POTENTIAL data. Medical data is highly variable in its scope and quantity. Thus utilizing languages which reserve blocks would necessitate greater disk capacity to store data for medical applications.

o Any system can be slow; as any system can be saturated. More often than not, DHCP systems that are characterized as slow are simply not optimized to their highest level of performance.

Issue 9. Much has been said about the lack of user understanding and awareness of DHCP products at the medical center level. Describe steps being taken to assure a consistent training plan throughout the system.

Discussion: In FY 1985, in response to the need to manage centrally funded training in support of the DHCP, the Director for Operations (10B) established a national training committee and tasked the committee with the management of national DHCP training. Members of the committee included the Director, MIRMO, one Regional Director, a site manager, two ISC directors, an Office of Academic Affairs (OAA) representative and a Continuing Education Center representative. Each year the committee evaluates the national training needs through the ISCs and SIUGs and develops a training plan. With the help of OAA, associated cost data is developed. Unfortunately, in the past, cuts in the travel budget have reduced the available travel $s to the point that only national programs scheduled for immediate installation during the fiscal year have received funding for training.

In FY 1986, the training committee decided on an alternative approach to provide a broader base of training. The approach called for the use of a number of low cost vehicles to provide ongoing training at VAMCs, such as the use of teleconferences; stereo tape systems (with an audio channel and a computer generated signal on the second channel which would allow the user to view the terminal interaction while listening to a narration about the subject); and Computer Aided Instruction (CAI).

A needs assessment will be conducted nationally to determine the medical center priorities. On completion, the committee will match these needs for classroom training with available funds in the travel budget. Training that can be conducted via one of the above vehicles will be assigned to the proper developer for course development, with assistance from the Regional Medical Education Centers.

It is difficult to provide a large population with information on DHCP and not have some deficiencies in delivery. However, we believe that the new approaches will provide a broad base of training for in-house use and will allow new employees to quickly gain proficiency in DHCP applications.

As for the general distribution of information to medical center staff, much work is currently in progress through conference calls to keep VAMC ADP staff informed as to the latest developments of DHCP. Also, an extensive electronic mail system is available to the users of DHCP to continually gain access to data concerning applications and the use of applications.

Issue 10. A common theme when visiting the VAMCs and ISCs is the lack of trained applicants for positions and the difficulty in retaining existing staff. Describe steps being taken to address this problem.

Discussion: The VA is suffering the same personnel recruitment difficulties as are many corporations in the private sector with trained ADP personnel. This group of staff continues to be highly paid and sought after, and the VA with its comparatively low pay scales and long hours is having difficulty recruiting in some areas of the country. There are, however, sectors of the country that are having less problems with recruitment than the others. Recruitment at the beginning level programmer continues to be satisfactory, although the VA then commits themselves to a $5,000 training program before much productivity can occur.

The VA is experiencing a high turnover rate (55 out of 169) of site managers in 1986, and significant turnover in its programmer ranks. These rates while problematical are very similar to those experienced in the civilian sector where turnover rates on major projects approaching 20% are not uncommon. The same factors influencing retention in the civilian sector of higher pay, different work hours, better equipment and location are also found in the government. The government ADP staff and personnel practices have the added disadvantage of job descriptions and classifications which do not reflect current practices in the private sector (i.e., development staff having to be supervisors in order to receive high salary rates).

Issue 11. List current FTEE projections/cost of trained personnel needed at the VAMCs/ISCs to properly support DHCP.

Discussion:

ITEM	FY 1987	FY 1988
VAMC - FTEE	395	395
ISC - FTEE	182	182
TOTAL FTEE	577	577
PERSONAL SERVICES	$16,136,000	$17,023,000

Issue 12. Critics have stated that DM&S has failed to produce an integrated ADP plan that links hardware acquisition, software development and implementation, telecommunications, office automation and management requirements into a unified whole.

Discussion: The vehicle for integrating these requirements is the ADP planning process which is a subset of the Agency's strategic planning process. Priorities are in place for software implementation; we are taking steps to more closely integrate central and local ADP planning and budgeting sizing requirements directly related to supporting software products are being used for all new hardware procurements; telecommunications interfaces have been centralized under one ISC to assure that DM&S moves in a common direction; office automation solutions are being explored and include the potential use of Wang equipment (from the Agency's central WP contract) to access DHCP and DHCP equipment to access Wang word processing; management requirements are being codified and bundled into programs such as DMMS. We feel that these steps are very positive and in keeping with a unified plan.

Issue 13. DM&S did not publish an ADP plan for FY 1986.

Discussion: During FY 1986 the responsibility for Agency ADP planning was moved under the purview of the Assistant Deputy Administrator for Management (004) in order to institute a more focused approach and achieve greater coordination among Agency elements in this area. An Agency ADP and Telecommunications Plan was developed by that office and included information ranging from budtet and procurement data to program management forecasting. The Medical Information Resources Management Office provided DM&S input to this plan on August 15, 1986. The Agency Plan was recently published and distributed.

Issue 14. The standards and requirements that IHS and DHCP have been held to and whether or not the IHS system's must adhere to more rigorous tests than DHCP.

Discussion: The IHS and DHCP systems are responsible for meeting a broad array of program and performance requirements. Both systems must conform to hardware and software service levels, hardware response time, standards for training, documentation, and communications, and standards for interfacing (networking) with VA central systems. In the case of DHCP, training and networking are addressed on a national level and coordinated among 164 facilities. Many DHCP products are feeding into central systems such as OPC, Dental AMIS, prototypes of PTF and Fee, and DVB's TARGET system for veteran eligibility information. IHS on the other hand has experienced difficulty interfacing with any of the Agency's central systems. In certain respects, DHCP is actually more demanding than IHS due to the fact that the vendor provided systems are limited by the contract as to what services are provided, whereas DHCP must remain flexible and adaptable to changing conditions.

Issue 15. It has been stated that DHCP will NEVER be able to provide local, regional and national management data so integral to all reasonably sound automated IHS packages. Unnamed knowledgeable sources say that DHCP cannot

- integrate clinical functions for patient management
- supply hospital management information
- provide information for the management of all of DM&S

Discussion: The integration of clinical functions is easily demonstrated at those sites that have implemented several clinical modules. It is possible for a physician to see radiology, laboratory, demographic data and surgical procedures on a single patient from a single menu. A local study at one of the larger VAMCs found that substantial time savings could be demonstrated for clinical personnel in radiology service by having ready access to the above patient data. This additional time was spend in direct patient care.

Information for management is currently being provided through handoffs of data from DHCP to the centralized management systems, i.e., the Automated Management Information System (AMIS), the Patient Treatment File (PTF), and the Outpatient File (OPC). The use of DHCP for data collection for these systems has increased the accuracy of the data while eliminating the time-consuming task of collecting the data.

The hospital management needs for DHCP are planned to be met by a Decentralized Medical Management System (DMMS) parts of this system is being successfully prototyped at VAMCs Hines and Long Beach. The conversion of DMMS from a prototype to Class I software meeting name space, data dictionary and documentation standards is currently occurring at the Hines ISC with a projected fall delivery. The most cost effective implementation of the DMMS package is dependent upon CORE+8 being installed and operational at medical centers.

The initial focus in developing DMMS has been upon providing support to VAMCs, because that is where health care is provided and that is where critical medical decisions that affect patients are made. Regional and national information will be a subset of the information used by local managers. When DMMS is fully tested at the local level, the information will be summarized for regional and Central Office management.

Issue 16. Original versus current cost estimates for DHCP and IHS.

Discussion: The initial estimates for DHCP and IHS were not comparable. IHS budget and planning estimates applied to support for 3 sites only, for a 33 month contract period. The DHCP estimates of the same point in time were for full system implementation (168 hospitals) a seven year period (FY 82 to FY 88) and a different set of modules.The original IHS cost estimates were 23.6 million dollars for a period of two years and nine months and provided for procuring and installing commercial systems at three VA medical centers. In the 1983 Agency ADP Plan, DHCP life cycle costs, for Initial/Full CORE (for the 173 sites where it was to be installed) were estimated to be 155 million.

The consulting firm of Booz-Allen and Hamilton recently completed a study comparing costs for IHS (i.e. commercial acquisition)and DHCP (i.e. in house) approaches to implementing hospital information systems VA wide. The boundaries for the study were: CORE plus the top 8 priority Enhanced DHCP applications, and a life cycle period extending from FY 87 to FY 96. The DHCP estimates were derived from life cycle projections the VA had developed for OMB and GAO. The IHS cost estimates were based on the original IHS cost proposals . The study team also solicited additional input from the vendors concerning quantity discounts and other matters.The bottom line from this comparison was: total life cycle cost of $ 777 million for DHCP versus $ 1.5 billion for IHS.

Issue 17. Findings from the Booz-Allen study and issues concerning the validity of the study.

Discussion: On February 23, Booz-Allen completed a strategic evaluation of DHCP versus IHS and reported its findings to the VA. The results of this study support the judgment of the Agency to proceed with DHCP development and procure hardware to expand its capacity to serve a larger community of hospital users. The following findings have particular bearing on this decision:

o DHCP over a 10 year life cycle will be significantly less costly than IHS (the difference between $ 777 million for DHCP versus $ 1.5 billion for IHS)

o Despite the significant cost differential between the approaches, there is no difference between the two in terms of quality of health care services provided

o Of the two approaches, DHCP is more acceptable to end users and best meets their functional requirements

o Any transition from DHCP to a commercial approach at this time would be extremely disruptive and demoralizing

Booz-Allen also pointed out advantages of the IHS approach and advised the VA to explore these characteristics to determine how they could be applied to strengthen the DHCP program. They sited particularly disciplines and accountability inherent in the management of a contractual relationship, the higher staffing levels and greater hardware capacity of the IHS prototypes, and vendor emphasis on structured design and project documentation.

Comparison of these two very dissimilar approaches was made particularly difficult by the short time frame. Booz-Allen was given less than 5 months to complete a strategic evaluation of the two approaches. There was not time to perform detailed pre- and post- automation assessments that would be required to compare quantitative benefits. (From analysis of key indicators, however, they found that there was no reason to believe that either approach would provide greater benefits.) Other complicating factors were:

o There is a vast difference in funding between the DHCP approach and the IHS prototypes.
o DHCP and each IHS prototype are at difference stages of evolution and none has been fully implemented.
o Performance of the IHS vendors is not uniform across sites
o The three IHS prototypes provide a limited sample for drawing inferences about a program of nationwide scope (i.e. single site implementations for each vendor versus 172 installed sites for DHCP).

Despite these complications, the Booz-Allen study normalizes key elements of each approach and is therefore able to compare "apples with apples". The comparison made in this study used the VA's requirements (as defined by top management and specified by the VA medical user community) as a baseline for comparing cost effectiveness over a period extending 10 years into the future. Booz-Allen then developed scenarios explaining how these requirements would be met over a 10 year life cycle beginning in FY 87, broke these scenarios into resource components, and costed each component for both an in-house and commercial acquisition approach. For every item in the resource matrix, there is a cost element evaluated for DHCP and IHS.

Issue 18. DHCP has so far relied exclusively on in house development of software for DHCP. Software vendors and others contend that many marketed applications would meet VA needs and have high user acceptance.

Discussion: Our own experiences implementing IHS and earlier clinical lab systems and the results of the Booz-Allen study comparing DHCP with commercial alternatives support the VA's strategy of in-house development and operation of its hospital information systems.

The VA has had experiences with contracting out ADP systems in the past. The contractual vehicle and dependence on the vendor for support have proven to be a hindrance for adapting these systems in a timely manner to changing requirements brought on by legislation and executive order. Dependence on a single vendor for both hardware and software (the IHS approach to hospital automation) would also lock the VA into proprietary software pricing schemes and the non-standard languages and proprietary data base management approaches which do not meet the Federal Information Processing Standards (FIPS)

Issue 19. The DHCP decentralized approach may result in a loss of benefits to the medical centers because they have to wait to get a fully integrated medical information system.

Discussion: Because of its size the VA hospital system has to wait to get a fully integrated medical information ststem under any approach. DM&S believes that greater benefits are realized sooner under the DHCP approach than under an IHS approach. Sufficient funding for the equipment on which to run applications is a constraint on in-house or vendor-supplied systems, as is the logistics of distributing and installing equipment at 167 sites.

Under DHCP, the highest priority, highest payoff applications are implemented first across the entire system. Commercial vendors, as indicated in the Booz-Allen study, would likely implement a whole system in a subset of hospitals, and then move to another subset of hospitals, because they do not have (and could not hire) enough staff to bring up their systems nationwide.

Issue 20. The development of DHCP software has been uncoordinated and piecemeal.

Discussion: Since 1982, there has been a single plan, originally developed by the Administrator's Program Management Task Force, for a fully integrated hospital information system, including clinical as well as administrative and management functions.

VA personnel involved in the MUMPS development effort have been, and continue to be, committed to this master plan.

The plan called for common system-wide utilities that would unify the hospital information system database, as well as standardize user interface/interactions and provide 4th generation DBMS capabilities. These system-wide utilities are know known as the VA Kernel, and include:

- FileManager
- MenuManager
- TaskManager
- MailManager
- Device Handler
- Sign-On and Security System
- Other specialized routines.

The plan also called for rigorous adherence to standards and conventions for applications coding. These standards and conventions are published, and a standards committee is assigned responsibility for maintaining and interpreting these standards and conventions.

By adherence to VA standards and conventions, the use of a data base management system which is driven by an active data dictionary for all data, and the use of the common system-wide utilities, all applications developed in DHCP will easily integrate into a hospital information system.

In addition, Clinical software development has been prioritized according to its benefit to the medical center. This priortizing process is subject to review throughout the Agency as well as OMB. Functions that cut across clinical areas, such as order entry and inventory, are being developed as a single package to be integrated with the other software packages. The ISC Council, which consists of the Director of MIRMO and the directors of each of the ISCs, oversees the software development process, assuring a comprehensive and non-duplicative development plan.

Issue 21. DHCP software products are perceived to be poorly tested and documented.

Discussion: Since 1983, our number one priority has been to establish a baseline of CORE software at the medical centers as quickly as possible to help the facilities keep pace with the dual problems of expanding workload and shrinking personnel resources. While this has been accomplished, it has been at the expense of documentation and quality control. Recognizing those problems, vast improvements have been made in the last 12 months. No new package is being released without a full complement of user and technical documentation. User and technical documentation for Initial/Full CORE products will be complete and up-to-date by the end of the calendar year. Documentation standards are being put in place and responsibility for assuring conformance to those standards is being centralized at one location. Software quality control has also expanded. In addition to two FTEE dedicated to documentation, MIRMO has also placed 3 FTEE at each ISC to establish quality control/verification staffs. Each package is now required to proceed through both an internal and external verification prior to distribution to the medical centers. The alpha/beta testing process has also been expanded to assure that the modules are tested in a wide variety of medical centers using both operating systems currently in place. On a regional basis, the ISCs typically distribute a new release to selected test sites prior to general distribution to provide a further level of quality control. The result has been much higher quality packages arriving at the medical centers.

One word of caution: Software packages are NEVER bug-free; whether they are developed by the VA or come from the private sector. Recognizing that we will never eliminate errors, we are taking all steps possible to reduce them.

Issue 22. Describe requirements placed on medical centers to implement DHCP software in order to assure timely use of these products.

Discussion: Initial and Full CORE software have the highest priority for implementation within DM&S followed by the Enhanced modules of Radiology, Dietetics, Medical Records Tracking, IFCAP, Surgery and DMMS. (Implementation of the Enhanced modules is dependent upon central procurements scheduled for award near the end of FY 1987.) These priorities have been established at the Agency level with responsibility for operationally acting on these priorities delegated to each individual VAMC Director. Periodic surveys are conducted to determine the status of implementation at the VAMCs and mandates are issued as necessary to assure nationwide conformance. This was first done in July 1986, for example, to assure that all facilities were using all features of the ADT/Scheduling packages. Effective, the third quarter FY 1987, we will begin using a new automated implementation status reporting system.

Issue 23. Describe the progress or lack of progress in developing the automated medical record and comprehensive order entry/results reporting.

Discussion: Progress in Implementation of Enhanced Order Entry (OREO) is summarized as follows:

- o Develop functional description (completed)
- o Write prototype system (completed)
- o Test prototype (now being tested with Lab)
- o Have other packages implement use of the few new OREO routines and files.

Progress on automation of the medical record is as follows:

- o Current DHCP modules contain/capture data used in the Automated Medical Record. These include LAB, Radiology, Pharmacy, Dietetics, MAS, Mental Health, etc.

Additional component of the Medical Record under development include:

Medical History
Physical Exam
Progress Notes
Consults
Vital Signs
Allergies and Immunizations
Treatment Plans
Discharge Summaries

Some of the development activities are associated with applications modules such as Nursing and Mental Health.

Issue 24. Discuss what steps have been taken to improve DHCP documentation.

Discussion: The Director, MIRMO has assigned the task of developing a national clearinghouse for documentation to the ISC in Region 3. As deliverables for this task, the ISC will provide the Department with documentation standards against which all DHCP documentation will be evaluated. MIRMO and the ISCs have also taken steps to hire professional documenters to reside at each ISC. This will substantially improve the quality of the documentation.

In the early stages of DHCP, the Agency sought private sector contracts to provide the documentation for Initial CORE. The products provided were not satisfactory, and were consistently delivered after software releases were available for distribution. This was unsatisfactory, and necessitated the shifting of documentation development in-house. Recent documentation released by the Agency (including Radiology, Kernel, Laboratory, Dietetics, and Pharmacy) are examples of the quality products the Agency is capable of delivering.

DHCP is also investigating the development of on-line documentation through the use of "help" screens. This would provide continual documentation support to the user without disrupting the terminal sessions.

Issue 25. Describe current controls to assure that software corrections are implemented at the VAMCs.

Discussion: To assure uniformity in distributing software patches (corrections to software released and operating in the field), an automated patch system was instituted last year on the national mail system. All site managers and many of the VAMC package coordinators have access to that module. When a new patch is released, interested users are automatically notified of its availability via a mail message. The patches are categorized by levels of urgency and the site managers are expected to implement accordingly. It is the responsibility of each VAMC to assure that those patches are implemented in a timely fashion. At this time, the VAMCs do not have a reporting requirement to identify when patches are installed.

Issue 26. The statement has been made that the VA has consistently failed to conceptualize what DHCP should be.

Discussion: The VA from its earliest records (the minutes from the Oklahoma City Meeting in 1979) has been striving towards designing and implementing an integrated hospital information system written in MUMPS. This system was designed from the very beginning as an integrated, Data Dictionary-driven system with modular development in various applications. These modular applications were installed as a rapid deployment of computers was implemented to the VAMCs in 1982-84. The software was designed so that entry of patient data had to occur only once during the registration process, and the information entered would be available to all modules and staff who had to interact with the patient data. The software and criteria for DHCP have changed over the years as various oversight agencies, legislation, and users have demanded increased functionality in order to support the needs of patients, medical centers and central office components. However, the VA in 1987 (as was the case in 1979) continues to be dedicated towards implementing an integrated hospital information system.

We are confident the systen will perform as expected because we have taken great care to involve hospital end users in defining what we expect from it. Heavy involvement and feedback from hospital end users as well as extensive prototyping in a variety of VAMC settings are two of the great strengths of the DHCP development approach and differentiate it from other approaches that have been tried by the VA in the past including the IHS approach.

Issue 27. Life cycle costs should include all centrally procured equipment used in the DHCP.

Discussion: DHCP life cycle costs do include all centrally procured equipment used for it. Our life cycle costs thru 1986 reflects a total of $82.5 million in equipment (excluding the value of existing and transferred equipment). This figure is only $1 million different from your staff's figure ($95.5 less $12.0) of $83.5 million ($3.2 + $42.4 + $9.6 + $11.6 + $16.7).

We do not feel that the value of the existing and transferred equipment is worth $12 million. $5.0 million would be a more realistic figure. We have not up to this time, including this equipment in our life cycle costs, however, if GAO feels it is appropriate we will include it in future lifecycle cost projections.

Issue 28. How DHCP hardware requirements are determined.

Discussion: For the 1983 hardware procurement (which provided hardware resources for the CORE applications of Admissions/Discharges/Transfers, Clinic Scheduling, Pharmacy and Laboratory), a sizing model was developed. It utilized FY 1982 data of record from Agency centralized databases such as AMIS to estimate CPU capacity, disk storage requirements, numbers of CRTs and printers, etc. While there were weaknesses in the model, particularly in the small VAMCs and the long-term care VAMCs, the validity of the model for the vast majority of VAMCs was excellent. Fitting all VAMCs into just five size classes was a constraint placed upon the model by the procurement process.

The present procurement activities include the use of a new sizing model that is more comprehensive and accurate than the model used to estimate CORE requirements in 1983. This model contains input variables related to nearly every aspect of VAMC activities that may be subject to future automation. The algorithms that compose this model were developed by Special Interest User Groups (SIUG), application developers and teams of experts familiar with a particular functional area. All data included in this model were verified by the VA Medical Center Director prior to it's inclusion in the model. Data was not only obtained from centralized Agency databases but was collected from medical centers via electronic questionnaires and data projections (for new construction) were submitted by VA District and Regional Planners as well. Though our intent is to procure only sufficient hardware to accommodate applications determined to be cost effective, we have included data in the model to enable effective planning strategies for the future.

Issue 29.a. Describe the decision to expand the original hardware procurements to include all facilities.

29.b This prematurely forced the VA into a hardware technology that is now being moved away from.

Discussion: The Chief Medical Director made the decision to use the available funds to satisfy the critical needs at the greatest number of VAMCs possible in 1983 after receiving staff analyses of the procurement cycle, and in view of the economy of scale to be realized by large scale equipment purchase. These initial procurements installed DHCP equipment at each medical facility to support the critical need areas of medical administration (Admission/Discharge/Transfer (ADT), Scheduling), pharmacy and clinical laboratory.

The current hardware technology is adequate to support the implementation of all CORE applications at all DHCP sites and some Enhanced DHCP applications at a majority of the DHCP medical facilities. The procurement vehicle currently being pursued will provide the computing capacity to support all Enhanced DHCP applications at all DHCP sites. All DHCP sites will not receive replacement systems as a result of this procurement, however the vehicle to provide the additional capacity required to support Enhanced DHCP at all sites will be in place. The largest DHCP sites will receive a replacement system and the existing hardware at those sites will be redeployed to smaller VAMCs to support Enhanced CORE applications.

Issue 30. Describe the method for deriving facility ADP hardware requirements. If done by modeling, explain how the model was validated.

Discussion: Measures of hospital workload, staffing and physical layout have been used as input data for the DHCP system requirements sizing model. This model was developed using a large knowledge base of the requirements of DHCP applications currently running at VA hospitals, and validated against this real-world knowledge. This applies to applications currently in production nationwide as well as to those running in a test mode at a smaller number of sites. For these, as well as for applications still in the design phase, this is supplemented by analysis of the workload represented, based on experience with similar DHCP applications. The shared common structure and design of DHCP applications, as well as our extensive information base both support this inference.

It should be pointed out that we have learned much about the modeling process from our experience on the last procurement, and have added scores of additional data inputs to insure that the model is sensitive to all relevant and significant variables.

Issue 31. DHCP currently follows a decentralized approach, with computers located in each medical center. Under an alternative approach, multiple VAMCs would be served from a bank of computers in one or more central locations.

Discussion: A centralized approach may appear on its face, to be an effective way to organize computer support. However, there are important diseconomies of scale in this approach which render it costly, inefficient, and unresponsive to users. It is worth noting that all the IHS vendors proposed local solutions, though they could have serviced their respective VAMCs from a central location had they judged that more effective.

Due to the highly interactive use of the DHCP systems required for effective operational support of VAMC automated functions, any regionalization or centralization scenario will cause telecommunciations costs to soar. Every piece of data has to be transmitted to a remote location, and every time that data is used, it has to be accessed at the remote computer. This results in substantially increased costs with no added value. Furthermore, we would expect costs to escalate in future years, because under deregulation telecommunications lines are becoming increasingly expensive.

Computer installations that serve multiple medical centers are necessarily more complex than single hospital systems, and pose significantly increased management and technical problems. A separate database and separate package implementation configurations would have to be maintained for each VAMC served, thereby compounding database and system management complexity and rendering decisions on configuration management increasingly difficult. Consequences of system failure are greater, in that several hospitals may loose their processing capabilities at the same time. Responsibilities of the Director of the host facility increase expoentially as he or she assumes the management responsibility associated with remote servicing.

Most important of all, the system becomes increasingly bureaucratic and unresponsive to users. If a user at a medical center - e.g., a physician, or pharmacist, or nurse - encounters a hardware or software problem, on-site help to solve it will not be available. Rather, the user will have to request help from someone at another location, who is reponsible for serving a number of different facilities. DHCP got started because a large central ADP operation was not effectively serving the operational needs of the medical centers.

In fact the Appropriations committees and Congress directed the VA in 1983 to discontinue development of regionalized systems and put all of its time and money into DHCP system development with computers in each hospital and MUMPS software support.

Issue 32. In 1983, the VA announced a plan to have Full CORE operational throughout DM&S by the end of 1985. As of July 15, 1986, only 52% of Full Core was operational (some was not available). Provide the current implementation status and explain the delay.

Discussion: The goals established in 1983 were ambitious ones which represented our best estimates for nationwide implementation and depended on a host of technical, political and procurement related issues falling neatly into place.

As of January 31, 1987, Initial CORE is 100% operational throughout DM&S and is maintaining currency, even though constant revisions have been required due to resource allocation changes and Congressional mandates, such as Means Testing and 3rd Party Billing. The Laboratory component of Full CORE, which has been available since 1985, is in operation at over half of our medical centers. The laboratory modules of chemistry, hematology and microbology are operational in 98, 97 and 61 sites respectively. The Inpatient Pharmacy applications consisting of intravenous additives(IV), ward stock and unit dose since their release have been implemented at 110, 69 and 11 locations respectively.

Granted, we are behind our original ambitious schedules. Hardware deliveries have not been as expeditious as hoped for. Software development cycles have been extended due to product complexities and changing requirements. The VAMCs have often been slow in applying the resources necessary to assure successful implementation. However, given the scale of this endeavor, we feel that sound, steady progress has been made.

Additionally, we have taken measures to improve the management of the program and to ensure that, in the future, all applications are implemented as scheduled. One such action is the creation of the DHCP Tracking System which will provide both the Information System Centers (ISCs) and the Medical Information Resources Management Office (MIRMO) with timely information on the status of hardware installation and software implementation. This will allow management to identify problems and bottlenecks and take immediate corrective action.

DM&S also issues national mandates for software implementation. This is proving an effective management tool for ensuring systemwide implementation of nationally approved software.

Issue 33. DHCP software modules currently under development, their priorities and scheduled release dates.

Discussion: Many of the Enhanced DHCP packages are ready for release or are expected to be ready during FY 1987, however, VAMCs do not have the necessary hardware so facilities are running the software only when extra space is available. Priorities for hardware procurement are:

ENHANCED DHCP

FY 1987	FY 1988	FY 1989*
Radiology	Surgery	Nursing
Dietetics	DMMS (Initial)	Mental Health
Medical Records tracking		(PAID)
IFCAP (Fiscal & Supply)		

OTHER ENHANCED APPLICATIONS

Fiscal (Balance)
Supply (Balance)
Management Support
    o DMMS (Intermediate)
    o Quality Assurance
    o Office Automation
Medicine
DVB Interface
Fee Basis
Social Work

Engineering
Dentistry
Rehabilitation Medicine
Extended Care
Nuclear Medicine
Personnel (Balance)
Readjustment Counseling/Outreach
Operating System Enhancements
Message Handling/Switching

* Based on OMB passback, other applications may be requested pending internal VA budget formulation and cost/benefit justification.

Issue 34. Some sources have stated that DHCP cost projections have grown from $155 million to $1.2 billion and that these changes undermine the credibility of the estimates.

Discussion: The term "life cycle costs" is used to indicate all projected costs associated with a specific project or program. It is a function of:

- o the starting and ending years;
- o the scope of the project or program at the time the projections are made; and
- o the accuracy of the known cost items and the projected costs.

The DHCP life cycle cost projections have varied over the years based on changes to one or more of the above factors. A chronology of these projections is given in the following table.

DHCP LIFE CYCLE ESTIMATES

SOURCE	SCOPE	LIFE CYCLE	LIFE CYCLE COSTS
National Association of Veterans Administration Physicians (NAVAP) Proposal (1981)	Initial CORE + minimal laboratory	Not Projected	Equipment costs of $15 - 24 million Total life cycle costs not projected
Project Management Task Force (1982)	Supplement existing ADP at 24 sites	FY 1982-FY 1988 (7 years)	$245,160,000
DM&S ADP Plan (1983)	CORE + small portion of extended CORE (Enhanced DHCP)	FY 1982 - FY 1988 (7 years)	$155,059,000
DM&S ADP Plan (1984)	Initial and Full CORE only	FY 1982 - FY 1989 (8 years)	$203,992,000
Management Improvement and Operating Plan (1985)	Initial & Full CORE + Expanded list of Enhanced DHCP modules (24 total)	FY 1983 - FY 1990 (8 years)	$501,240,000
DM&S (1986)	CORE, Enhanced DHCP and Comprehensive DHCP (Total 36 applications)	10 years CORE: FY 1983 - FY 1992 Enhanced DHCP: FY 1987 - FY 1996 Comprehensive DHCP: FY 1992 - FY 2001	$1,176,763,000
Booz-Allen and Hamilton (1987)	CORE + 8 Enhanced DHCP applications	10 years FY 1987 - FY 1996	$777,000,000

Issue 35. A review of DM&S life cycle costs of DHCP reveal inconsistencies in annual ADP plans, the ADP budget formats, DHCP budgeting and accounting systems, and compliance of DM&S Planning/Budget guidance with OMB Circular A-11.

Discussion: We are aware that in the past our DHCP lifecycle cost estimates and OMB budget exhibits (OMB A11-43A and exhibit L) were not in agreement. Starting with FY 1987 we have instituted controls to assure consistency among comparable report elements.

However, with the information we receive from the current cost accounting reports, it will be extremely difficult to produce a more accurate accounting of DHCP costs.

The VA cost accounting system produces cost information on a functional and organizational basis only. This information is captured in the CALM (Centralized Accounting for Local Management) system. The CALM cost accounting information is based upon orders placed by organizational units and each order is identified by functional units (Ex: travel vs. prescriptions). The financial reports produced from this information have limited usefulness when trying to allocate resources to a program such as DHCP. More accurate information is needed to support the ADP program planning and budgeting systems. A cost report such as the Medical Care Cost Distribution Report must be developed to provide more precise accounting and budgeting data for DHCP.

The costs of developing such a report were prohibitive when the original DHCP lifecycle costs were developed. The current yearly operating costs of producing the Medical Care Cost Distribution Report is approximately $5 million yearly. With a current estimate of $1.2 billion of DHCP lifecycle costs, the costs of producing such a report may be saved through the proper use of the information it will produce.

Since the time GAO and VA staffs worked together to create the life cycle cost estimates for the DHCP system, a number of things have occured which will require the recalculation of these estimates.

Issue 36. Discuss the omission of items such as telecommunications, costs of space leased from GSA, staff time expended by SIUG members, utilities, etc. from the DHCP lifecycle costs.

Discussion: Since the time VAO and VA staffs worked together to create the life cycle cost estimates for the DHCP system, a number of things have occured which will require the recalculation of these estimates.

Both GAO and VA staffs have identified items which were omitted from the original cost estimates. The telecommunication costs, personnel costs of SIUG members, and local utility costs are among the items we are evaluating for possible inclusion when the life cycle cost estimates are recalculated. Also, now that we have a few years of actual costs, there are items which we now realize were overestimated in the original cost estimates, and need to be adjusted to reflect the lower costs which were actually or will be incurred. Site preparation costs have been incurred in FY 83, 84, 85, and 87 to date, and we will include these expenditures in our revised DHCP life cycle cost estimates.

However, the item which may most dramatically change our life cycle cost estimates is the effect of budget passbacks. For example, original plans called for purchase and installation of $46,665 million of equipment in FY 1988. Current plans must be scaled down to accommodate the $20,177 million available in funds.

As soon as this is completed, we intend to recompute the DHCP life cycle cost estimates, taking into consideration the items discussed above.

Issue 37. Discuss the exclusion of leased telecommunications costs in DHCP lifecycle cost projections.

Discussion: The estimated leased telecommunications cost for the Department of Medicine and Surgery as a whole for Fiscal Year 1987 is $21.9 million, as indicated on Exhibit A-11-43A, not $29 million as reported. This includes all leased telecommunications services for our VA hospitals, outpatient clinics, domiciliaries, nursing homes, and other supporting facilities. DHCP telecommunications costs is a relatively small percentage of total DM&S telecommunications costs.

The bulk of current and future telecommunications traffic is data sent to central systems to meet central reporting requirements. Therefore, most of these telecommunications costs would be allocated to the central systems, not to DHCP. Some costs may legitimately be attributable to DHCP per se, and not merely a substitution of electronic for telephonic "Communication". This is one of the areas we expect to explore when we refine our life cycle cost projections.

Issue 38. A schism exists between OIS&T and DM&S computer efforts.

Discussion: The division between OIS&T and DM&S occured before the first DHCP computer was ever deployed in the field. The argument could in a simplistic way be described as the "centralists" vs "local users". The installation of DHCP did probably more to "heal" this long standing rift since the implementation of DHCP proved that the large corporate data bases were necessary, could interact with the DHCP computer systems, and would not be replaced, and the field stations received the necessary technology and hardware to enable them to do their jobs with ever decreasing resources at the medical center.

Issue 39. It is said that the three IHS sites were prohibited from communicating with one another concerning their automation experiences.

Discussion: When the IHS study was first conceived a decision was made that during initial installation the IHS VA staff should limit communications among themselves. The reason for this was simple. The IHS project was to be a three year prototype study or experiment involving three discrete vendor systems. If the staffs of the three VAMC's were permitted to migrate problems and solutions regarding their respective vendor systems, it would have caused cross contamination to occur which could invalidate the study's findings.

The limitation on inter-site communication was lifted over 12 months ago following the installation of each of the vendor's patient care sytems referred to in the IHS contract as mandatory modules. Once these key modules were operational the foundation of the system was firmly in place and the Agency could distinguish one IHS system from another. Since this time the IHS staff's have been encouraged to speak with one another and have even been afforded opportunities to share information i.e. IHS user attendance at DHCP SIUG meetings, weekly IHS conference calls, etc.

It should be noted that there has always been a restriction on the IHS vendors communicating with one another. This was enacted by the IHS Contract Officer in order to prevent the dissemination of proprietary information and to avoid comparisons of vendors and vendor support between sites

Issue 40. The approach that has been taken to support the DHCP tests at March and Fitzsimons and how you have assured appropriate support.

Discussion: The DHCP software feasibility tests being conducted at March Air Force Base and Fitzsimons Army Medical Center continued to be supported by VA staff from Denver and Loma Linda VAMCs, who are dedicated to the task of implementing DHCP software at the respective military medical sites. There are four FTEE staff members in Denver to support FAMC and three FTEE at Loma Linda to support MAFB. DHCP software modules have been minimally modified to meet DoD "minimum start-up" requirements. This level of "on-site" support for a DHCP implementation is unparalleled in DM&S; however, the compressed timeframe called for in the test scenario certainly justifies this high level of support.

Implementation progress at MAFB has been excellent, due to enthusiastic support from both MAFB management and staff.

Implementation progress at FAMC has been much more difficult to achieve, in spite of the significantly higher level of support being supplied This has been due to lack of FAMC ADP staff support, as well as reliability problems with the broad-band Local Area Network (LAN) used to support required data communications to the terminal devices.

BOOZ, ALLEN & HAMILTON, INC.

PRESENTATION TO THE HOUSE VETERANS' AFFAIRS COMMITTEE
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE

APRIL 8, 1987

SUBJECT: DECENTRALIZED HOSPITAL COMPUTER PROGRAM AND
INTEGRATED HOSPITAL SYSTEM COMPARABILITY STUDY

STATEMENT OF: Mr. Bruce J. Block
Vice-President
Booz, Allen & Hamilton, Inc.

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear before you today to discuss the recently completed Decentralized Hospital Computer Program (DHCP) and Integrated Hospital System (IHS) Comparability Study.

I will briefly discuss our qualifications for undertaking that study, the study requirements as defined by the VA, our methodology, and our findings and conclusions. Findings and conclusions reflect Booz, Allen & Hamilton's views based upon data collected during the study.

BOOZ, ALLEN & HAMILTON'S QUALIFICATIONS

Booz, Allen & Hamilton is one of the oldest and largest management and technology consulting firms in the world. Founded in 1914, Booz, Allen serves government, and industry from offices on five continents. We are the consultants of choice to the top managers of many of the world's major corporations and we have served nearly every major Federal agency. Our mission is client success. Our reputation has been built on results and the problem-solving creativity, practicality, and objectivity our staff bring to every assignment.

The DHCP and IHS Comparability Study was conducted by Booz, Allen's Management Consulting Division. This division specializes in providing organizational, management, planning, analytic, economic, and mission support services to Federal civilian agencies, an important segment of our client base since the 1940s. The Management Consulting Division is currently providing consulting services to six major Federal agencies. These assignment cover the spectrum of management issues from strategic planning to program management and from information systems development to program evaluation.

The project team that conducted the DHCP and IHS Comparability Study was selected to provide the specific expertise needed to best conduct the study. Areas of expertise represented by the team included:

- Strategic program planning and evaluation
- Health care management consulting
- Information systems cost analysis
- Hospital information system development and implementation
- Federal ADP procurement and systems development
- VA Department of Medicine and Surgery programs

STUDY REQUIREMENTS

The study was a strategic assessment of the cost-effectiveness of two approaches, represented by the DHCP and IHS programs, for providing future information systems support to VA Medical Centers (VAMCs).

Its purpose was to determine whether the VA would be justified in pursuing either approach exclusively or predominantly. To make that determination, the VA asked Booz, Allen to assess the effect of the two approaches on program life-cycle costs, benefits, and operational efficiency and effectiveness.

The scope of the study was defined by the VA to ensure that the two approaches were compared against the same set of requirements. Two key requirements were specified:

- The systems provided must perform functions similar to those currently implemented or planned for DHCP Core and eight priority Enhanced Core modules.

- Information systems must be provided at all VAMCs.

The study was initiated in late September 1986 and completed on February 23, 1987. Study findings and conclusions are documented in a final report entitled "Decentralized Hospital Computer Program and Integrated Hospital System Comparability Study."

STUDY METHODOLOGY

Our methodology for conducting this study had four primary components:

- Development of a DHCP and IHS comparison framework
- Collection of assessment data
- Analysis of approach effectiveness and costs
- Assessment of cost-effectiveness.

As currently established, the DHCP and IHS programs have different purposes and requirements and thus are not directly comparable. To compare the two approaches, it was therefore necessary to define a common purpose and scope of requirements. This we did by reviewing documented requirements for the current DHCP and IHS programs to identify requirements that were similar. We then established two program scenarios that defined how the DHCP and IHS approaches would meet these requirements. The scenarios were reviewed with the VA and with the current IHS vendors for reasonableness; changes were made based on their suggestions. The two scenarios that resulted represented reasonable definitions of capabilities needed under both approaches to meet a common set of requirements.

The second component of the study involved collecting data on the anticipated levels of effectiveness and costs that would be associated with the scenarios. The following general approach was used:

- Effectiveness data were primarily obtained through visits to 7 VAMCs, a mail survey of 21 VAMCs using DHCP systems, and interviews with another multi-hospital system and with industry representatives.
- DHCP cost data were obtained primarily from the VA and independently assessed by the Booz, Allen study team; IHS cost data were obtained from the three IHS vendors and were based on existing cost estimates, IHS cost proposals, and vendor cost analyses.

Based on the data obtained, we compared the effectiveness and cost of the two approaches in providing required information systems, support services, and management support. Where differences between the two scenarios were identified, we performed an analysis to determine if different characteristics of the two approaches could reasonably be assumed to be the cause. Characteristics assessed included tools/technology used, process/methodologies followed, staff capabilities provided, and organizational approach employed.

We used information from these analyses to conduct the cost-effectiveness assessment, the fourth component of our methodology. That assessment identified differences in the cost-effectiveness of the two approaches and the characteristics that caused those differences. To assist in determining which areas of cost-effectiveness were most important to the VA, we also conducted a trade-off analysis. This analysis showed the potential impact of choosing one or the other approach based on levels of user acceptance, ADP program risk, and funding requirements. Study conclusions reflect our assessment of the importance of these factors in choosing a future approach.

STUDY FINDINGS AND CONCLUSIONS

Three primary sets of findings support the conclusions presented in the study:

- Comparative effectiveness findings
- Life-cycle cost findings
- Comparative cost-effectiveness findings

Comparative effectiveness findings are shown below on Table 1. Based on data obtained during the study, the IHS approach can be expected to be more effective than the DHCP approach in providing management support, some support services, and information systems that are systems-engineered and -designed. The DHCP approach can be expected to be more effective than the IHS in providing information systems that are functional to VAMC users. The primary reason for the difference in information system effectiveness lies in the inherent strengths and weaknesses of the systems' development approaches: DHCP features a user-oriented approach, and IHS features a classical top-down approach. Differences in support service and management support effectiveness areas can be attributed to the greater use of dedicated specialists under the IHS approach.

Table 1
Effectiveness Summary

INFORMATION SYSTEMS		SUPPORT SERVICE		MANAGEMENT SUPPORT	
Effectiveness Area	**Best Approach**	**Effectiveness Area**	**Best Approach**	**Effectiveness Area**	**Best Approach**
• Functionality	DHCP	• Deployment	MIXED	• Program Planning	IHS
• Technical Adequacy	IHS	• Operations	IHS	• Program Monitoring	IHS
• Performance	IHS	• Maintenance	MIXED	• Program Evaluation	IHS
• Integration	IHS				

Life-cycle cost findings are shown below on Table 2. The DHCP life-cycle cost estimate of $777 million is significantly lower than the $1,496 million estimated for the IHS approach. There appear to be two reasons for these differences:

- Significantly more staff resources are provided to deploy, operate, and maintain IHS systems
- More hardware and hardware with greater capability is provided under the IHS scenario.

Table 2
Cost Summary

PROGRAM SCENARIO	PROGRAM COMPONENT COST ($ Millions)			TOTAL ($ Millions)
	INFORMATION SYSTEMS	SUPPORT SERVICES	MANAGEMENT SUPPORT	
DHCP SCENARIO	$207	$556	$14	$777
IHS SCENARIO	$531	$952	$13	$1,496

Cost-effectiveness findings are shown below on Table 3. These findings do not result in a clear-cut choice between the two approaches. The information systems provided under both approaches have strengths and weaknesses; however, the DHCP approach would provide its systems at a significantly lower cost. The IHS approach would be more effective in meeting support services and management support requirements, but at a higher cost.

Table 3
Cost-Effectiveness Summary

ASSESSMENT	PROGRAM COMPONENT ASSESSMENT		
	INFORMATION SYSTEMS	SUPPORT SERVICES	MANAGEMENT SUPPORT
COST	DHCP	DHCP	SAME
EFFECTIVENESS	MIXED	IHS	IHS
OVERALL	MIXED	MIXED	IHS

Our conclusion on which of these two approaches is best for the future is based on an analysis of the trade-offs implied by their differences. Three factors were analyzed: user acceptance, ADP program risk (i.e., the probability that ADP program requirements might not be fully accomplished), and funding requirements. The trade-off analysis showed that:

- The DHCP approach can be expected to result in higher levels of user acceptance
- The IHS approach can be expected to result in lower ADP program risk
- The DHCP approach can be expected to result in lower funding requirements.

Our conclusion from reviewing these findings is that neither approach _fully_ represents the best approach for the future.

We believe that the DHCP approach offers the best foundation for providing future information systems support to the VAMCs; however, significant changes will be required to ensure continued cost-effectiveness. The DHCP's greatest strengths for the future lie in its:

- Existing levels of VAMC-specific functionality provided by DHCP application software

- Prototyping methodology for defining VAMC requirements under operational conditions

- User support infrastructure, represented primarily by its network of Special Interest User Groups (SIUGs).

These characteristics are the foundation for success of the current DHCP approach.

A transition from the current DHCP approach to an IHS approach would require a fundamental change in program direction. We do not believe that a change of this magnitude is necessary, nor do we believe that it would be the most cost-effective approach for the future. Changing to the IHS approach would likely result in both lower user acceptance and higher program costs. The loss in cost-effectiveness would be significant and might never be regained.

Although the DHCP approach provides the best foundation for the future, significant changes will be required to correct weaknesses in the current approach. Based on comparisons with the IHS approach, these weaknesses include inadequate management support and support services and lack of emphasis on information system engineering and design. As the overall VAMC information systems support program moves from its initiation stage to full-scale support, it becomes even more critical to address and correct these weaknesses. It is our understanding that the VA has begun several new initiatives to correct the identified weaknesses.

PREPARED STATEMENT OF WILLIAM T. CORUM. MCDONNELL DOUGLAS FEDERAL SYSTEMS COMPANY

Testimony of William T. Corum, McDonnell Douglas Federal Systems Company, before the House of Representatives Committee on Veterans' Affairs, Subcommittee on Hospitals and Health Care.

April 8, 1987

Mr. Chairman and Members of the House Subcommittee on Hospitals and Health Care, it is an honor to participate in today's hearing which will focus on the VA's Decentralized Hospital Computer Program (DHCP) and the pilot Integrated Hospital System (IHS) programs. My name is Bill Corum. I am a Vice President with the McDonnell Douglas Corporation. For the past two years I have been responsible for leading our company's Federal Health Systems Division. Managing large scale healthcare automation efforts is not new to me; our company currently provides hospital information services to one out of four of America's hospitals; ranging in size from 14 to 2105 beds with 50,000 outpatient visits per month.

As you can imagine, we employ thousands of highly trained professionals to meet the many diverse needs of our Corporation. For example, our health systems staff alone is made up of 2200 health care and data processing professionals with significant hands-on experience. In this way, all software development takes place in an environment where data processing professionals design systems around the requirements of health care professionals. In addition to our own employees, regional client user's groups regularly meet to help us with this evolving process. As an industry leader in health information systems, we have used this approach the last 17 years.

The McDonnell Douglas Patient Care System is a proven, state-of-the-art, fully integrated system. When the VA released a Request for Proposal (RFP) in 1984 to establish a test of three commercial hospital information systems in an effort to determine the most efficient, cost-effective way for the VA to proceed in hospital automation, McDonnell Douglas submitted a bid. The result of that bid, as you know, provided our company the opportunity to install and operate our system at the Saginaw VA Medical Center. We did this in order to compete in a process that we believed would determine the future of hospital automation for the VA.

We believed then, and still do today, that the Congress designed this scenario in order to fairly evaluate all available options, including DHCP, in order to ensure that veterans, VA health care providers, hospital administrators and taxpayers would be well-served.

In order to clarify the guidelines under which we agreed to participate in this competition, I have attached to my testimony a portion of the VA's most current published plan for data processing, entitled "Information Systems Strategic Plan -- Fiscal Years 1987-1992", which is dated January, 1987. I have included pages 22-25 of the DM&S section as part of my prepared statement, because it clearly states the VA's official views on the Integrated Hospital System. I believe all the Subcommittee Members are in possession of a copy of my full prepared statement. In case you have not had a chance to review it fully, I would bring one sentence to your attention. This sentence states:

> "A formal evaluation of the IHS system is scheduled to be completed by Arthur Andersen and Company by September 30, 1987."

This VA statement confirmed our own understanding of the evaluation schedule.

You can imagine our surprise when on February 9, 1987, the VA announced that it planned a "phase-out" of the IHS's and intended to pursue a full implementation of DHCP. This announcement was made 19 days prior to our completion of all contract deliverables.

We kept our commitment to the VA. Our contracted date for full installation at Saginaw was February 28, 1987. We met that target.

We at McDonnell Douglas, believe that our Patient Care System is the industry leader. We further improved our off-the-shelf product throughout our contract period at Saginaw because of the very rigorous and excellent requirements placed upon us by the VA. Within the specified contract period, we have fully installed in both an inpatient and outpatient environment, a comprehensive, fully-integrated patient care system.

Throughout the process we have had an excellent relationship with the Saginaw staff and have, with their help and advice, taken advantage of their experience to tailor our comprehensive product to meet VA-specific needs. This outcome is especially noteworthy in that the medical center staff's previous experience with hospital automation, when compared to typical private sector hospitals, was minimal. This increased the implementation challenge for both parties and we're proud of the results.

We came to Saginaw because we believed we were part of a competitive process that would result in a uniform evaluation of all options available to the VA. We ask only that our system be evaluated, fully and fairly, during the demonstration test period, which is scheduled for completion on September 1, 1987.

Mr. Chairman, in your invitation to this hearing, you asked us to address the facts supporting our "Innovative Approach" which we referenced in our letter of February 18, 1987. The concept and estimated costs came about in this manner: While participating, last year, in the Booz-Allen & Hamilton DHCP/IHS comparison study commissioned by the VA, we were asked to do two things: First, we were required to submit data intended to "revalidate" our original 1984 bid. Ten cost categories were used in a rigid, structured manner in order to arrive at a price for repeating the Saginaw experience throughout the VA. Second, they asked us to consider what they termed an Innovative Approach to meeting the VA's needs using experience gained at Saginaw, standard commercial practices, networking capabilities, and any other suggestions we deemed appropriate. Both approaches, they said, would have to be well-documented, and be based on an eight-year life cycle. We met with Booz-Allen & Hamilton on two separate occasions, presented them our two approaches with supporting documentation, and discussed our Innovative Approach in depth. We hoped that this approach would be presented in the Booz-Allen & Hamilton report, but to insure the VA would have the opportunity to consider this approach, we presented it, with supporting materials, to the Agency on January 28, 1987. We expected to follow-up this meeting with the VA in the months ahead.

McDonnell Douglas' investment in a fully integrated system occurred 17 years ago. This integration capability, designed up-front, permits healthcare providers to have access to patient data, instantly, once it is entered anywhere within the system. This is key to the definition of "integration" - data entered once into a central data base is available to all users. It appears that the VA may also want to achieve this level of system functionality.

This very basic difference between DHCP and IHS in systems architecture provides a major challenge for us in proposing a merging of current DHCP functions with our system. We believe that the core of any hospital system is its integration. So we looked at how we could use DHCP in a VA-wide alternative system, and still retain our integration capability and protect as much of the VA's DHCP investment as possible. Our IHS system at Saginaw employs a Laboratory module that is integrated and operates on DEC PDP 11/44 hardware. The DHCP Lab module, while not integrated, also operates on this DEC equipment. We have already integrated numerous Lab systems to accommodate hospitals which have, and wish to keep, in-house systems. Some of these systems are MUMPS-based.

We determined that by using the DHCP Lab System instead of our own (and with some additional development effort) we could protect the VA investment for approximately 200 DEC computers and some substantial software development. In doing so, our prices would go down significantly. We believe that some other DHCP modules which do not require integration but are desired by the VA, such as Medical Library, Medical Media, Building Management, Security/Police Service, etc., characteristic of DHCP's "Comprehensive Core", could use some remaining VA DEC equipment in a standalone mode.

We also determined that total system costs could be further reduced if the VA were interested in "remote site processing" from some of its VAMC's to others - either those in close proximity (such as the four VAMC's in Chicago) or from small hospitals to larger ones. We are currently demonstrating this capability both commercially and at Saginaw through our communications network with the Gaylord Michigan Clinic. In our model, we divided the 172 VAMC's into eight sizing categories based on VA-provided workload data we used for our 1984 bid. We took the two smallest categories, which equated to 46 VAMC's, and assumed for estimating purposes that they could be networked to larger VAMC's for processing power. This reduced the overall system hardware and staffing requirement due to our unique Tandem hardware architecture without adversely affecting user-friendliness. Again, the cost decreased.

We did not price either site preparation or facility management such as we provide at Saginaw. We based this decision on the assumption that the 169 DHCP medical centers have already undergone site preparation to one degree or another. Without visiting each of these sites we could not determine specific costs or need. We also omitted any pricing for facility management. Although we have 8.5 employees at Saginaw, this is not a typical commercial approach nor is it the way we understand the VA currently supports DHCP. We assumed that the VA would want to protect the jobs of DHCP on-site data processing professionals by letting us train them to be systems managers and we included in our price, training and documentation.

Our Saginaw system could be installed VA-wide using the DHCP Lab and some remote processing, for approximately $590 million in 54 months. There are, of course, some "qualifiers" to this estimate. I have outlined the key ones above, namely site preparation, facility management, integrating the DHCP Lab and some remote processing. A finalized estimate would require specific in-depth knowledge of what would be acceptable to the VA under such an approach. We also based our estimate on service level standards routinely employed and accepted as cost-effective by the private sector.

We assumed that after 54 months the VA might not be interested in purchasing such items as hardware and software maintenance, on-site support, or use the software enhancements which we routinely provide to our commercial customers.

Mr. Chairman, you suggested to me in your letter of March 11, 1987, that McDonnell Douglas submit an additional formal proposal to the VA. As I noted, we provided both Booz-Allen and the VA with a detailed outline of our Innovative Approach. The Chairmen of the House and Senate Appropriations Subcommittees on HUD/Independent Agencies subsequently directed the Office of Technology Assessment (OTA) to review this issue and provide recommendations in September, 1987.

We are willing to work with the VA and submit our Innovative Approach as an Unsolicited Proposal which would contain the supporting detail of our recent estimates. However, we strongly believe that the next step should be the review and recommendations provided by OTA to the Congress. At this time, I fear that any new attempt to submit an Unsolicited Proposal or demonstrate another operational test would be seen as a delaying tactic. OTA should determine if enough information currently exists regarding systems architecture, design and technology in both DHCP and IHS for an evaluation to be made. If OTA recommends further comparison, with established evaluation criteria, we believe that would be a more appropriate time to present our Innovative Approach as a further basis for evaluation.

For the past 30 months McDonnell Douglas has committed its resources and energy to installing our Patient Care System in the Saginaw VAMC. The purpose of this effort was to allow our system to be critically evaluated and compared to DHCP and the other commercial IHS sites. We encourage this evaluation. OTA, the technological arm of the Congress, is well-equipped to provide unbiased advice. We believe this evaluation should be accomplished as soon as possible so that the VA can get on with the business of hospital automation. We are fully prepared to support a procurement decision under those circumstances, whatever the outcome. I cannot emphasize too strongly, that our Corporation shares your goal of providing the very best health care for the nation's veterans.

Mr. Chairman, thank you for the opportunity to appear before the Subcommittee today. I would be pleased to respond to any questions.

ATTACHMENT

VETERANS ADMINISTRATION
1930

INFORMATION SYSTEMS STRATEGIC PLAN

Fiscal Years 1987-1992

January 1987

**Associate Deputy Administrator
for Management
Washington D.C. 20420**

1. **SYSTEM NAME:** Integrated Hospital System (IHS)

2. **STATUS:** Operational/partially implemented

3. **DESCRIPTION:** The Integrated Hospital System is a program administered by DM&S involving the acquisition, operation, and evaluation of commercially-available hospital information systems in three VA medical centers.

The goal of the IHS program is to conduct prototype demonstrations in three VAMCs to test the applicability of commercially-available hospital information systems to the VA medical center environment. DM&S will evaluate the suitability of using off-the-shelf data processing systems by acquiring and operating hospital information systems at three medical centers representative of the broad range of types, sizes and missions of VA medical centers:

- o Philadelphia, Pennsylvania (large)
- o Saginaw, Michigan (medium)
- o Big Spring, Texas (small).

DM&S initiated the IHS program based on Congressional guidance to evaluate the ability of the private sector to provide functional and cost effective hospital information systems to meet the information needs of its medical centers. In addition, DM&S will study the amount and degree of system modification and "custom tailoring" which is required to make off-the-shelf software packages functionally adequate for VA medical center requirements. A Request for Proposals for the tailoring, installation and operation of the IHS at the three test sites was released in October 1983. Vendor proposals were received in January 1984. The proposals were evaluated by multi-disciplinary teams of health care and data processing professionals from the three test sites. In August 1984, after extensive negotiations, contracts were awarded to:

- o Shared Medical Systems (SMS) for the VAMC Philadelphia site
- o McDonnell Douglas Automation (McAuto) for the VAMC Saginaw site
- o Electronic Data Systems (EDS) for the VAMC Big Spring site.

A Request for Proposals for evaluating the IHS systems was released in February 1984. Vendor proposals were received in March 1984. In June 1984, a contract was awarded to Arthur Anderson and Co. to evaluate the IHS at the three test sites for functional and cost effectiveness, as well as to monitor the progress made by the sites and the vendors in implementing IHS.

The IHS systems acquired are comprehensive hospital information systems. IHS is comprised of mandatory and optional functions which support VA medical center activities. The mandatory functions are:

- o registration
- o admission/discharge/transfer (ADT)
- o clinic scheduling
- o medical records tracking
- o clinical laboratory
- o pharmacy
- o ward order entry
- o results reporting.

In addition to the mandatory functions, the IHS vendors are providing optional functions supporting:

- resource allocation and cost accounting
- nursing
- radiology
- dietetics
- materials management.

Each contractor has also been encouraged to augment IHS by proposing support for other hospital functions from their off-the-shelf hospital information systems.

DM&S uses the term "integrated" to describe a data processing system in which several patient care, patient support, and management support information processing functions are linked with each other in a common system of hardware and software. All information is maintained in a common database which is centered on the patient data record.

The systems architecture for the IHS prototypes varies from site to site. Shared Medical Systems (SMS) at Philadelphia VAMC utilizes IBM and Digital Equipment Corporation (DEC) hardware and a COBOL/MUMPS operating system. McDonnell Douglas Automation at Saginaw VAMC relies on a combination of Tandem, IBM, and Digital hardware operating exclusively with COBOL software. Electronic Data Systems at Big Spring VAMC uses Data General computer hardware that also operates with COBOL software.

The IHS systems are being developed in two distinct phases. Phase I involves the installation of mandatory modules which will automate critical patient care functions in the medical center. Phase II continues with the installation of optional modules which will automate less critical clinical functions and most administrative functions.

The information produced by the IHS systems will be responsive to the complex needs of the selected VA medical centers. IHS applications will capture, store, process, and generate a wide range of clinical and administrative information and present it in a manner that has utility to both managers as well as end users.

IHS generates data output in screen format, hard copy, or electronic media for input or transfer to other computer systems. Samples of current system products include laboratory test requests, pharmacy prescriptions, and applications for medical care.

A formal evaluation of the IHS system is scheduled to be completed by Arthur Andersen and Co. by September 30, 1987. The following are benefits which accrue from the systems at the present time:

- The IHS system has provided all three sites with a more accurate and current status of individual patients.

- The systems provide improved maintenance and timeliness of information required for management decisions.

- The systems support quality assurance functions by providing readily available clinical information.

- The users at all sites have witnessed widespread acceptance of computerization with minimal disruption of operational activities.

- o All sites have experienced improved scheduling and utilization of medical center services, including reduced waiting times for patients.
- o The nursing module at each site produces information the facility can use to establish staffing levels based upon acuity levels on the wards.
- o Decrease in the amount of time required to transmit clinical results to providers. (At Saginaw VAMC which has implemented all mandatory modules.)
- o Reduction in the staffing time required to process prescriptions, identify adverse drug interactions, and eliminate duplications of therapy. (At Saginaw and Big Spring VAMCs which have installed their respective Pharmacy modules.)

4. SYSTEM INTERFACES: The IHS vendors will furnish their host VAMCs a means of exchanging data with the VA central data base located at the Austin DPC. The protocol established at each IHS site will allow users to capture data from the PAID, CALM, AMIS, PTF, and LOG-1 systems and transmit it to the central data base at Austin. The Saginaw and Philadelphia installations will be utilizing an electronic interface via VADATS in order to perform data exchanges while the Big Spring VAMC and its vendor EDS will be relying on a magnetic tape interface for data transmission.

5. SYSTEM LIFE CYCLE ($000):

System life cycle costs have not been developed. Expenses to date and contract totals are given below.

IHS System Costs ($000s) approximate costs as of 7/86	Expenses to Date	Contract Total
Implementation		
Big Spring VAMC	3,200	5,[illegible]00
Saginaw VAMC	2,300	3,300
Philadelphia VAMC	9,000	13,700
Evaluation		
Arthur Anderson & Co. Contract	2,300	2,900
IHS/DHCP Comparability Study Contract	—	1,100

Benefits to be determined in IHS/DHCP Comparability Study.

6. DEVELOPMENT PLAN/MILESTONES:

During FY 86, the vendors continued installing "off-the-shelf" systems to meet the requirements of the IHS mandatory modules. To date, all three sites have witnessed the implementation of vendor-supplied basic modules in the areas of admissions/discharges, transfers (ADT), medical records tracking, clinic scheduling, laboratory and pharmacy.

The Saginaw VAMC has successfully installed and customized all mandatory modules. The Philadelphia VAMC is now scheduled for completion in August 1986. The fully customized mandatory modules are scheduled to be installed at Big Spring VAMC on September 1, 1986.

The delays in the implementation of mandatory modules have impacted other activities in the IHS project, and necessitated rescheduling of events related to system implementation and system evaluation. Consequently, the entire IHS prototype demonstration originally scheduled for completion in May 1987 is now scheduled for September 1, 1987, which has in turn slipped the completion date for a study to compare IHS with DHCP.

		Completion Date	
Event	Begin Date	Planned	Actual
IMPLEMENTATION			
Installation of Mandatory Modules			
Big Spring VAMC	09/94	09/86	
Saginaw VAMC	09/84	05/86	05/86
Philadelphia VAMC	09/84	08/86	09/86
Installation of Optional Modules			
Big Spring VAMC	12/85	11/86	
Saginaw VAMC	12/85	02/87	
Philadelphia VAMC	12/85	11/86	
Test Period	09/84	09/87	
Evaluation	06/84	09/87	
Pre-automation Report	—	06/85	06/85
Implementation Monitoring Reports	06/86	—	
Post-automation Report			
Comparison of Pre- and Post-automation Environments		08/87	
Recommendations for IHS Use in VAMCs		09/87	
IHS/DHCP Comparability Study	9/86	02/88	
Preliminary Results		01/87	
Final Report		02/88	

BOOZ·ALLEN & HAMILTON INC.

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November 17, 1986

Saginaw VA Medical Center
1500 Weiss
Saginaw, MI 48602
Attn: Charlie Clamp, McDonnel Douglas

Dear Mr. Clamp:

Booz, Allen & Hamilton, under contract with the Veterans Administration, is conducting a study comparing the effectiveness and costs of the two hospital information systems operational in VA Medical Centers (i.e., the Decentralized Hospital Computer Program and the Integrated Hospital System). A major portion of the study involves the determination of projected costs for developing, installing, operating, and maintaining either of the two systems in 172 VAMCs over ten years. In order to perform this analysis Booz, Allen has developed two scenarios (i.e., one for DHCP and one for IHS) that describe the associated course of events required to completely deploy and maintain the selected system in all VAMCs. The scenarios will form the basis for determining costs for each approach.

As part of the study Booz, Allen is soliciting vendor involvement in the review of the IHS scenario. The objectives of this review are to 1) comment on the correctness and reasonableness of the approach from a technical perspective, and 2) discuss elements of cost as presented in each vendor's respective IHS Cost Proposal and how those elements would have to be modified to reflect full deployment in 172 VAMCs.

The draft IHS scenario is enclosed. Please review the document and prepare any comments or suggestions that you feel are appropriate. I will contact you to schedule a meeting to discuss the approach in detail and review cost matters. Until then, please feel free to contact Jerry Seufert at (301) 469-3096 in you have questions. Thank you for your assistance with this request. Your participation is key to the successful completion of the study and overall quality of the results.

Sincerely,

BOOZ, ALLEN & HAMILTON Inc.

Dan Swedberg
Senior Associate

Attachment

MCDONNELL DOUGLAS
FEDERAL HEALTH SYSTEMS DIVISION
600 McDonnell Boulevard, Hazelwood, Missouri 63042

May 20, 1987

JUN 2 1987

Honorable G. V. (Sonny) Montgomery
Chairman
Subcommittee on Hospitals
and Health Care
Committee on Veterans' Affairs
335 Cannon Office Building
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Thank you for the opportunity to participate in the April 8th hearing on hospital automation for the Veterans' Administration (VA).

During the hearing we were asked to provide, for the record, the estimated number of employees McDonnell Douglas would need to implement our suggested "Innovative Approach", VA-wide. I was also asked to estimate costs to provide computer operator support on a 24 hours per day, 7 days per week basis, as well as estimate total system costs for 18 years. We have attached as enclosures 1 and 2, information that responds to the first two of the above requests. The 18-year life cycle question, however, is another matter.

McDonnell Douglas cannot project changes to VA system requirements over 18 years. In order to accurately make an estimate of costs over this period, a great deal of requirements and technological information would need to be available that is not, nor is it likely to be over such a protracted period. We have never been asked to provide 18-year life-cycle projections for information systems. Our industry changes at such a rapid pace that any estimate beyond 8-10 years is purely speculative. Booz-Allen & Hamilton recognized this and asked us to base our estimates on an 8-year life cycle during their IHS/DHCP comparison study.

Numerous examples could be given to support this position but perhaps one particularly stands out. McDonnell Douglas has been in the health systems business for over 17 years. When we began, a typical customer purchased a shared financial system with significantly less functionality than the same system provides today. For a large hospital to have more than 50 terminals (none of them "intelligent" as they are today) would have been unusual. Today, that client has the same shared financial system but with functionality that has grown, substantially, to accommodate industry and government demands (e.g., Third Party Billing, Cost Accounting, Casemix, etc.). They also have a fully integrated patient care system and microcomputer-based add-on modules such as Nursing Management and Materiel Management. Now, the PC is replacing the current "intelligent" terminals which have, in turn, replaced "dumb" terminals. That same hospital today may have 300-400 terminals of all varieties. Communications costs have decreased due to satellite communications or fiber optics. Data storage has improved, significantly, in the same time frame. We have moved from tape to disk and now to optical disk technology. I could go on, but I hope the example above illustrates our point that beyond 8 to 10 years, cost projections cease to be meaningful.

The information systems' industry is rapidly changing. Over the last 20 years, the price of hardware has been reduced by half every four years. The rate of change has recently increased and is expected to continue at a faster rate of cost improvement.

Our own IHS hardware supplier, Tandem Computers, has just announced changes in their technology that improve price performance and reliability. These recently announced changes would have a positive impact on our Innovative Approach, which did not include them. But assuming that some hardware would have to be replaced within an 18-year system lifespan, even this recently announced technology is likely to be improved upon at least four to five times over an 18-year period; therefore, pricing such a moving target of expanded technology would be virtually impossible.

McDonnell Douglas wants to serve the VA healthcare system. Should an RFP be initiated today, we would expect it to require the private sector to base all estimates for a Firm Fixed Price on an 8 to 10 year life cycle; however, should we ever choose to submit an unsolicited proposal, as has been suggested, we would base it on our Innovative Approach (i.e., 54-month implementation) with on-going support negotiable based on VA requirements. This, we believe, is reasonable, even though the technological changes in that period of time will undoubtedly be profound.

We understood Mr. Jack McDonell's request for an 18-year projection during our testimony and questioning period, but in retrospect, for the above reasons, we would question the validity of any estimate based on an 18-year projection.

We wish to clarify, for the record, some misconceptions that may have arisen from the testimony of Dr. John Straumfjord, who described a McDonnell Douglas information system currently installed at the Moffitt Cancer Center in Tampa, Florida. This system is called "IHS" by McDonnell Douglas which is confusing, because the name given to the pilot commercial patient care system currently being demonstrated in VA medical centers is also labeled IHS. However, the McDonnell Douglas system currently operating at Moffitt is a financial system and is in no way similar to our patient care system currently operating at Saginaw.

The system at Moffitt is in a new hospital staffed by personnel unfamiliar with data processing. This is the first installation of our IHS financial system on IBM hardware. Some initial problems came up and were presented to McDonnell Douglas by the hospital staff at a February meeting. Since that time much progress has been made in correcting "bugs" that occur in an initial installation. The most relevant point is that the system at Moffitt is not a patient care system but primarily a financial system that runs on IBM computers, not the Tandem computer used by our Patient Care System at Saginaw.

Sincerely,

William T. Corum
Vice President

Enclosures

WTC/cnf

FULL-TIME EMPLOYEE EQUIVALENT (FTEE) ESTIMATE
TO SUPPORT THE
IHS/DHCP INNOVATIVE APPROACH

O Months 0-54 (Implementation Period)

- Manpower would vary based on workload intensity throughout the 54 month period. At the peak of implementation activity, we estimate that 467 Full Time Employee Equivalents (FTEE) will be associated with the VA Program. This number would decrease, substantially, after month 55.

O Month 55 and Beyond (Post-Implementation Period)

- Although we recommend the VA purchase on-going support, the scope of that support could vary, substantially, based on the VA's requirements. This, too, is in accordance with common commercial approaches where customers wish to minimize recurring costs and provide themselves with as much autonomy as practical. Our ultimate post-implementation workforce would be based on that VA decision.

ENCLOSURE 1

24 X 7 COMPUTER OPERATIONS SUPPORT
FOR THE
INNOVATIVE APPROACH

ASSUMPTION: The VA would elect, as we suggested, to employ remote site processing, where practical, thereby eliminating the need for computer rooms in some VAMC's. We assumed that 47 VAMC's would be remotely processed and, therefore, would not require computer operations support. The actual number could vary.

0-54 Months
(Implementation Period)

$590 Million (Original Estimate)
+ 45 Million (Computer Operations Support for 125 VAMC's)
$635 Million

CAVEAT: For a variety of reasons, we do not recommend this approach. Our concept and original estimates were based on using VA employees, trained by us, for this role. None of our existing commercial clients have requested that we provide computer operations support.

PREPARED STATEMENT OF DR. JON STRAUMFJORD

My name is Dr. Jon Straumfjord. I am a Professor of Pathology at the University of South Florida, Chief of the Laboratory Service, James A. Haley Veterans Administrative Hospital and former Director of the Laboratory and current member of the executive committee for Moffitt Cancer Hospital, Tampa, Florida. During the past year I have had the opportunity to observe the installation of the McDonnell Douglas Hospital Information System at Moffitt Cancer Hospital and compare it to the Veterans Administration's DHCP computer system. I am a member of the special users group for the laboratory portion of the DHCP system. I was not a part of the original DHCP development group so I have no feeling of authorship to the DHCP system. I feel I am qualified to render an opinion regarding health care computer systems since I have been responsible for the development of two laboratory information systems, the first in 1964, one of the first systems in the country that worked.

In deference to your time I'll keep my comments brief concentrating on 5 points about the McDonnell Douglas Integrated Hospital system at Moffitt Cancer Hospital.

1. Only 60-70 percent of the features work after almost one year.

2. The system is generally cumbersome and not user friendly requiring more extensive training in its use. Examples are:

    a. Currently to order Xrays the individuals must look up a code number in a book, enter it and type in the diagnosis and any comments. For materials management and dietetics that same process is also true.

    b. Report generation is faulty. If data is requested for a period of time greater than one month, one gets duplicate data. Medical record tracking currently appears useless.

    c. Patient registration is cumbersome, difficult and does not work for the clinic personnel. From a systems point of view the program works but is poorly designed for practical use.

    d. Insurance billing is poor. McDonnell Douglas fixes the program and the problem recurs. Double billing was the usual early after implementation and still occurs.

    e. Patients are identified by a Unit number. Any error in the patient identification during reregistration will assign the patient a new unit number. This has created errors and potential harm to patients. The ambulatory care committee has reported their concerns to the hospital executive committee as a potential hazard to patient care. They have also asked that the Xray program not be used because of errors generated by the program.

    f. Prior to 60 days ago, if an improper answer is given to a prompt, the terminal locked up as well as the entire system, and must be reset by data processing personnel. This has been fixed.

3. Few of the clinical programs are available, no laboratory package, no pharmacy package, no personnel package no mailmen package and no radiology package to date. Pharmacy was promised in 1986 but will not be ready until 1988. What is available is essentially a text editing system.

4. At the present time they are seeing response degradation with only 48-50 patients utilizing a mainframe computer (IBM 4381-group one.) .The System currently supports 56 printers and 121 terminals.

5. The system is very expensive. Software was approximately $700,000 and the computer $1.2 million. The enhancements which should be a part of the basic package, will cost as much as the original software. The response of McDonnell Douglas to problems was in the opinion of the Chief Administrator and his associate, was for less than desirable. They indicated they had to threaten suit before they received an adequate response. Neither of the Administrators would recommend the system and sould seek another but they feel they are "hooked".

The data processing staff for this 48-50 patient hospital with 1100 outpatient visits totals 11. Seven of these are operators, one secretary, one PC coordinator, and 3 professional programers. In addition, McDonnell Douglas supplies 1 full time resident individual and approximately one FTEE in additional support. At the Tampa V.A. Hospital we have a total of 11 FTEE directed to data processing with 3 above the GS-10 level with the remaining 7 no greater than GS-5's. This is for a hospital with an inpatient load of 400-450 and approximately 162,000 outpatient visits. Data processing also supports the Orlando and Pasco outpatient clinics. The cost of the V.A. equipment was approximately $210,000 and even with the upgrade to the more powerful equipment the cost will not exceed $800,000.

The fact that the Integrated Hospital system does not have a laboratory program is very important. Lab programs generally consume 25 to 50% of the total hospital computing capability. Availability of laboratory results from the computer is generally the single most positive feature of a hospital system in the eyes of nurses and physicians.

Our government has received a good deal with the DHCP system. It needs improvement but is a workable system: is cost effective and suits the needs of a VA hospital for both inpatient and outpatient care. Thousands of employees have learned the system and to shift to another system would be costly in manpower time. To exchange a working system for one of questionable function would be a disaster. The hospitals are under mandate to become more productive and the data supplied by the DHCPO system is absolutely essential for that goal. A new system even if it works will delay obtaining meaningful data for at least three years and with the current RAM model, it means we must add two years to the time before the effects of a workable system are noticed.

But even more important, is the impact of a system on the quality of patient care. The transition would adversly affect care as mistakes are made until a new system is learned. No single thing has a greater impact upon a hospital than a computerized hospital information system either for good or bad. A good system is like a symphony conductor converting discordance to beautiful and effective harmony. A good system is positive on employee moral and a bad system devastating to moral particularly if they liked a previous system.

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TESTIMONY OF

PAUL W. SCHAFER, M.D.

EXECUTIVE DIRECTOR

NATIONAL ASSOCIATION OF VA PHYSICIANS (NAVAP)

at the

HEARING REGARDING VETERANS' ADMINISTRATION DEPARTMENT OF

MEDICINE AND SURGERY'S ACTIVITIES CONCERNING THE

DECENTRALIZED HOSPITAL COMPUTER PROGRAM AND THE

INTEGRATED HOSPITAL SYSTEM

before the

SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE

of the

HOUSE COMMITEE ON VETERANS AFFAIRS

APRIL 8, 1987

My name is Paul W. Schafer. I am a physician, a surgeon. I appear here today in a strictly unofficial capacity in respect to the Veterans' Administration but rather as the Executive Director of the National Association of VA Physicians (NAVAP). I speak on behalf of the Veterans Medical Program and those health care professionals who serve therein. I am a product of the surgical residency program of the University of Chicago where after a brief stint on that faculty I left to become Professor and Chairman of the Department of Surgery at the University of Kansas School of Medicine in Kansas City. There I was actively involved in our affiliation with five hospitals of the VA System; namely, in Leavenworth, Wichita, Excelsior Springs, Topeka, and Kansas City. I later served as Chief of Thoracic and Cardiovascular Surgery at the Walter Reed Medical Center and there trained a generation of the Army's surgeons who served with distinction in Korea and Vietnam. I now continue my service in the federal public sector as the full-time Chief of Thoracic Surgery at the Veterans Administration Medical Center here in Washington, DC. My current academic identification is as Professor of Surgery, Georgetown University. I an accompanied by a fellow NAVAP member, Dr. Ross Fletcher, Chief of Cardiology at the Washington, DC VAMC, who will illustrate the most salient part of my abbreviated presentation, the full copy of which I present for the record.

As you know, Mr. Chairman, NAVAP became involved in the data processing issue 5 years ago as we learned that a whole host of prototype programs developed by VA personnel were not only being withheld from serving our patients, but were actually being considered for destruction. Worse than that we learned that the Agency, during the prior decade, had squandered $200,000,000 on various data processing entrepreneurial efforts to create specifications for programs to be used by VA health care personnel. And VA doctors and patients were without a nickel's worth of program product to show for it. It was thus that we joined in your successful efforts which resulted in the Decentralized Hospital Computer Program (DHCP) that is now up and running in 169 of our medical centers and in most of our 220 outpatient clinics.

This remarkable endeavor is passing through its initial core program phase and is poised for its next incremental enhancement for which adequate funds were appropriated in the current fiscal year. The program meets users needs even better than anticipated. It has moved speedily forward, and is remarkably cost effective. Being in the public domain, being hardware independent, free of proprietary costs, and most particularly because of its effectiveness, the DHCP has been adopted by the Indian Health Service, and its medical administrative module which the Department of Defense calls its ACCESS program is running in all military hospitals.

NAVAP has maintained its keen interest in the DHCP, has observed its progress, and has carefully watched its evaluation by others including the VA Inspector General, Price-Waterhouse, Booz-Allen & Hamilton, and the House

Appropriations Survey and Investigations Staff. We have not seen the General Accounting Office Report. We have also looked carefully at the material being disseminated by the contractors who have put up proprietary systems at VAMCs in Philadelphia, PA; Saginaw, MI; and Big Springs, TX. Sadly, we have also watched the Department of Defense repeat the VA's pre-DHCP errors. Over the past 15 years they too have spent over $200,000,000 developing specifications for programs without having produced a single one.

NAVAP has a professional commitment to proficiency in use of information technology for the benefit of Veterans' Health Care. We are interested in all evaluations of the efficiency and effectiveness of the DHCP, so that this information technology's best use can be identified and existing application modules refined. As you will note from my submitted materials NAVAP is initiating its review of the studies that have been conducted and will develop its own assessment based on useful information. NAVAP's preliminary findings are that the studies we have reviewed contain some useful information but suffer from faulty premises, inadequate evaluation criteria, and particularly from methological weaknesses. The Appropriation's Staff study stands apart in that it exhibits no analysis and no effective methodology for fact gathering and verification. Moreover, its assumptions have not been established, and its conclusions cannot be supported from the items it describes. It is of no help.

The problem with all of these studies, to a greater or lesser degree, is that they focus exclusively on a limited technical data processing persepctive, without considering broadly, the role of information technology in the primary purpose of delivering health care effectively, efficiently, and safely. The evaluations have totally neglected the missions of medical education and research that are part of the DM&S responsibility. They do not recognize that there is an emerging field of medical informatics, and that the DHCP is playing a central role in this new discipline in medicine. They fail to recognize the substantial body of health services research relevant to these issues. The explicit and implicit evaluation criteria that have guided the structuring of these studies tend to be the data processing practices of the 1970s - back then said to reflect mainframe mentalities.

Overlooked entirely are the Kernal functionalities beyond the VA File Manager conventions which have been employed by users to create program prototypes. There seems to be no awareness that programmed logic is soon to be added as a quantum jump in DHCP functions and that Augmented Transition Networks (ATN) and expert systems -- Artificial Intelligence, if you will -- are on the near horizon.

Mr. Chairman the message I bring to your Committee is that the DHCP reflects prototype programs created by health care professionals using information technology for the benefit of veterans. This is so unlike programs created by data processors' specifications to which health care professionals and veteran patients are expected to conform; with changes in these specifications coming only with great delay and at a huge recurring cost.

I would now like you to hear first hand from Dr. Fletcher, our cardiologist who together with his fellow physicians, vividly illustrate how our Veterans Administration Decentralized Hospital Computer Program is actually being used right now to provide for thousands of veterans health care of unmatched quality, with such efficiency and with such minimal cost as to be almost unbelievable.

Dr. Fletcher.

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Long Beach, CA

MEMORANDUM April 3, 1987

To: NAVAP Board of Directors

From: Paul W. Schafer, M.D., Executive Director

Subject: Evaluation Criteria for the VA DHCP

1. In pursuing our recent discussions on the next phase of extending the DHCP into additional clinical areas, and the points of criticism that were appearing in the various evaluations by different organizations, a preliminary survey of available studies has been completed. A summary of the findings of this preliminary survey is attached. (See Attachment #1).

2. The findings make clear that the evaluations generally fail to address the issues that are relevant for health care, and for the mission of the VA Department of Medicine and Surgery. The scopes of the studies generally have focused narrowly on optimizing the data processing function from the perspective of industry practice of the 1970s and early 1980s, and not on optimizing health services through using contemporary information technology approaches. The information reported in these studies, therefore, has much less value for professional review and planning than should be expected.

3. In order to improve the value of follow-on studies for the professional services in DM&S, it is recommended that NAVAP move ahead with the panel of colleagues to define review and evaluation criteria for information technology support of clinical practice, medical education, and research in our VA Medical Centers. The NAVAP Office is preparing materials and background information to facilitate the panel's reviews.

ATTACHMENT #1

PRELIMINARY SURVEY OF EVALUATION STUDIES OF THE DHCP

The purpose of this preliminary survey was to determine what information was in the studies of the DHCP that could be useful for the professional work of NAVAP members in maintaining and improving the quality of health services provided to veterans. The survey included a preliminary review of the VA Inspector General's Audit of the Decentralized Hospital Computer Program, the Department of Defense's Peer Review Group Report on a Site Visit to the Tampa VA Hospital, McDonnell Douglas's briefing to the U.S. House of Representative's Appropriations Committee Surveys and Investigations Staff on Concerns about the VA's Acquisition of Medical Information Systems, the House Appropriations Committee Survey and Investigations Staff report on Veterans Administration Medical Computer Programs, and the Booz-Allen & Hamilton Draft report on the Decentralized Hospital Computer Program and Integrated Hospital System Comparability Study of January 9, 1987. In addition, the preliminary survey included a review of some letters commenting on the DHCP, submitted to members of Congress by McDonnell Douglas, Shared Medical Systems, and Technicon.

This preliminary survey did not have available the long-delayed report on the DHCP being prepared by the U.S. General Accounting Office, nor any of the comments on the above evaluations that probably have been prepared as official responses by the Veterans Administration.

THE FINDINGS

A. GENERAL

Some of the studies contain some information that is useful for the professional work of NAVAP members in improving health care services for veterans, and for identifying cost saving alternative approaches in specific health care delivery contexts. On the whole, however, the studies exhibited methodological weaknesses when addressing the clinical perspective and the operational realities of the DHCP as we know them. The comments and purported studies by vendor systems for the DHCP, and the Report by the Appropriations Committee's Surveys and Investigation Staff echo these vendor interests.

B. Particular Problems with the Studies

1. Narrow Scope of the Studies

All of these studies, to a greater or lesser degree, focus exclusively on a data processing perspective, rather than a medical care perspective. The studies do not look at the improvement of health care through the application of information technology, but look at ways in which the data processing personnel on the study teams prefer to structure the environment in which they work. The priority framework of health care is subordinated, in general, to the priorities of data processing personnel.

A clear exception to this characterization is the DoD Peer Review Group Report on Tampa, that manifests an awareness of the clinical purpose of medical information systems; this study, however, contains some unfortunate factual errors and omissions.

Not only is the medical care mission of the Department of Medicine and Surgery neglected in the studies, but also the medical education and research missions, and the interdependencies of these missions, are nowhere to be found. The data processing personnel who developed the studies do not appear to have familiarized themselves with health care computing or with the Department of Medicine and Surgery as an organization.

Finally, the studies, including the Peer Review Group report, fail to recognize that the DHCP represents an institutional acculturation and insertion of the new discipline of Medical Informatics. The data processing perspective of the study groups is oblivious to the professional role of clinicians in shaping information systems in accord with the accumulating principles and proven best practices in this field of medicine, and the open communication of experience and experimental results that is built into the organizational design of the DHCP effort.

2. Inadequacy of the Evaluation Criteria and Assumptions

The explicit and implicit evaluation criteria that have guided the structuring of the studies tend to be the data processing practices of the 1970s. There is no appreciation evident that the field of systems engineering and the sub-field of software engineering exist, or have anything to contribute to the data processing task. There is no hint that the reviewers are aware of the substantial professional work that has been done on health care services research, and no inkling of awareness of the scientific methology that underlies the recent work in medical informatics.

The Booz-Allen report is the only one that does a credible explanation of its cost estimating methodology and assumptions. As a result, some of the costs of using the vendor-supplied hospital information systems can be identified as missing. But this study's evaluation of the management and methology of the DHCP fails to recognize the software engineering and systems engineering principles underlying the approach. In addition, the "showcase" bias in user perceptions at the vendor hospital information systems sites is not factored out of the performance evaluations.

3. Omission of Reference to Scientific, Technical and Financial Strategy of the DHCP

The studies uniformly look at only a very short range projection of what they observed occurring in the DHCP, and omit any evaluation or analysis of the strategy that has been guiding the successive plans for the DHCP. There is no recognition of the scientific strategy for coordinating medical informatics experimentation and communications, or of the technical strategy for migrating functionality down to VLSI-based, minimum-cost workstations. The cost containment strategy, mirroring the technology acquisition doctrine developed in large corporations and university business schools, and crystallized as Federal Government policy, is not mentioned.

Moreover, there is no recognition of the evolution of modern medical practice, and the professional work on cost-effective use of information technology that is being conducted by various professional and managerial sub-specialties in the field of medicine. Since the evolution of these perspectives directly enters into the progressive elaboration of specific DHCP plans, the omission of any consideration of this strategic orientation seriously limits the usefulness of the studies.

4. Other Specific Problems

There are a number of other specific problems with the studies that this preliminary review identified. For example, the studies fairly uniformly manifested a data processing knee-jerk preference for large, centralized data processing management approaches, and showed no awareness that the mainframe orientation of data processing during the 1970s is being supplanted with a network-based orientation with processing capabilities closer to user functions. None of the studies relects any awareness of the current focus on domain analysis both for assuring that user requirements are met in a much more satisfactory manner than has been the experience in the past, and also to identify the appropriate generic and abstract interfaces for structuring reusable software components. The roles of the VA's File Manager and Kernel in the progressive definition of domain knowledge embedded in the information processing and decision support algorithms of health services are totally ignored.

Another problem is the substitution of advocacy for objectivity in the vendor critiques and the Appropriations Committee Surveys and Investigation Staff report. The purported "findings" in these documents do not conform to norms of truthfulness required in studies that attempt to be impartial and objective.

RECOMMENDATIONS

I. NAVAP's panel and cooperative work with colleagues in the U.S. Indian Health Service and other health service institutions will undertake the development of explicit evaluation criteria that can be used for promoting the refinement of medical information systems. The absence of explicit criteria, reflecting the current evolution of knowledge in the fields of medical informatics, health services research, and information technology engineering, are one reason why studies such as those reviewed nere are so haphazard in their approach to identifying the measuring of clinical factors affected by information systems.

II. Sound evaluation criteria need to be applied to medical information systems by persons who have the trained perception to know what those criteria mean, and who know what medical practice and health service delivery are. NAVAP will formulate a policy on the professional experience and credentials that should be required of personnel who participate in evaluation studies of the DHCP.

III. NAVAP will communicate to VA and other interested parties its professional interests in seeing that objective evaluation of the DHCP, in accord with the criteria to be developed, will become institutionalized within DM&S as part of ongoing quality assurance and periodic SERP reviews.

PACEMAKER SURVEILLANCE
REGIONS 1 2 3 4 VETERANS ADMINISTRATION
PACEMAKER SURVEILLANCE • 50 IRVING ST., N.W., WASHINGTON, D.C. 20422 • (202) 745-8380

Presentation of

ROSS D. FLETCHER, M.D.
Chief, Cardiology Section
VA Medical Center
Washington, D. C.

before the

House Committee on Veterans Affairs

concerning the

VA Eastern Pacemaker Surveillance Center
and the
VA Decentralized Hospital Computer Program (DHCP)

Wednesday, April 8, 1987

APRIL 8 TESTIMONY

At the VA Medical Center in Washington we were fortunate to be early users of the versatile database now known as the VA FileMan. Organizing and rapidly retrieving patient information is the cornerstone of good patient care. The VA FileMan has extensive data-typing and cross referencing among other features to promote rapid, error free data entry and searches on large and small data bases, and allows complex data outputs to be simply specified and printed. Physicians in my section initially set up databases to track new antianginal and antiarrhythmic therapies. Their success stimulated them to create files for cardiac procedures on all our patients with heart disease.

The chief of the electrophysiological lab designed files for patients with arrhythmia. He installed them on the VA FileMan without programming knowledge. He has generated sophisticated reports, performed advanced searches and computations using FileMan conventions. Others on my staff developed files for the echo lab, cath lab, treadmill lab, and later Holter and ECG. The most far reaching early applications were the files we generated for our patients with implanted pacemakers.

Prior to this program important information was kept separately on the inpatient chart, the follow up outpatient chart, implantation cath lab log and the telephone surveillance station. We developed the pacemaker database using eighteen primary data files encompassing over 145 specific fields or attributes which could be entered for multiple telephone or clinic follow up visits.

When the VA was charged by Congress to set up a national pacemaker registry and surveillance system for all veterans with pacemakers we loaded our program into larger minicomputers. Because of prior experience with the prototype programs we were completely operational one month after the computer arrived on site. As the FileMan has become more versatile with later versions and as pacemaker technology has become more complex new data items have been added to our database and new output forms generated.

The remarkable efficiency of our system allows each technician to accurately and safely follow over 800 veterans which includes evaluating the patient and his pacemaker, updating of files, producing detailed, tabulated and graphed reports. All generators and leads with malfunctions discovered by us or under FDA recall are automatically flagged and produce a reminder on the screen as the caller talks with their patients. We have now followed directly 5,000 patients since 1982 in the Eastern Center. An extension of our clinical registry was the addition of the national VA pacemaker registry containing information on 20,000 patients.

Seeing the progression of local applications to the pacemaker program encourages my staff to set up files with any new technology. As we became investigators for the implantable defibrillator, many forms were required by our research committee and the company. My colleagues set up an additional file on the FileMan. The files on FileMan include all patients receiving the device in my institution both during investigations and after FDA approval. This database will be incorporated into the existing Pacemaker Registry and Surveillance System for use on a broader scale.

A natural outgrowth of the pacemaker surveillance program and the other cardiology files we created and tested locally was an integrated cardiology database. Our local files were enhanced by cardiologists from the seven VA Regions and the files were restructured to be become part of the core software in the national DHCP software. As a result a summary option on any terminal in the hospital lists all the cardiology procedures by date on a given patient and provides a summary of results. Each option can be expanded to a full report on the results of all cardiology procedures. The success of our hospital wide system is assured because the prototype programs were progressively refined and allowed entry and retrieval of 2-3,000 patients in three to four years before inital testing in DHCP.

The presence of the cardiology data on our hospital system brings unexpected benefits since our files are in a database networked with the medical administration, pharmacy and laboratory packages. We in cardiology recently became able to administer a medication which not only lowers total cholesterol in the blood but proportionally increases the scavenger "good" high density cholesterol. In fifteen minutes with a routine added to my menu, I produced for our lipid clinic 400 names of patients whose cholesterol exceeded 240mg %. Most of these patients were notified and many were provided advice or therapy to lower their lipid levels in order to prevent coronary artery disease.

The physicians, nurses, technicians and administrators make use of the VA FileMan in our hospital DHCP. Because the FileMan is not machine dependant we have recently downloaded FileMan to PC micro computers for smaller applications. This program has gained wide acceptance and is being used to manage a large variety of problems. The files created in these smaller applications may become the core software of the future.

I strongly urge the continued development of this software which so successfully meets the needs for our administrators, lab directors, physicians and most importantly the veteran patients. The veteran patient not only benefits from fast, reliable information retrieval but I am sure many of the competent physicians working in VA hospitals are attracted and retained by the ease of retrieving data and the opportunity to organize creatively their areas of expertise for large groups of patients.

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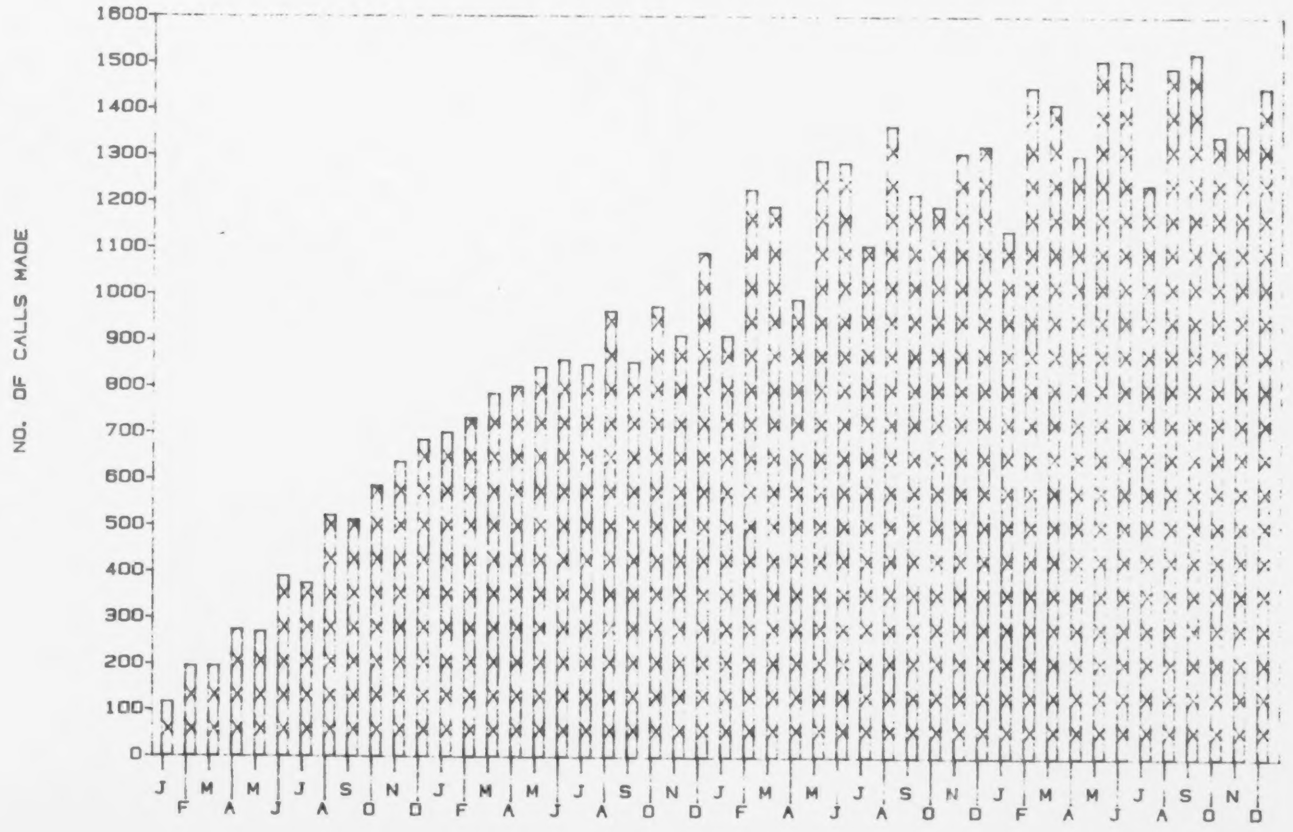
The Pacemaker Surveillance Center is currently monitoring pacemaker patients and sending reports to the following Medical Centers:

Albany NY
Albuquerque NM
Allen Park MI
Ann Arbor MI
Asheville NC
Augusta, GA
Baltimore, MD
Bath, NY
Battle Creek, MI
Bay Pines, FL
Bedford, MA
Birmingham, AL
Boston, MA
Brockton, MA
Bronx, NY
Brooklyn, NY
Buffalo, NY
Canandaigua, NY
Castle Point, NY
Charleston, SC
Cheyenne, WY
Chicago (Lakeside), IL
Chicago (Westside), IL
Chillicothe, OH
Cincinnati, OH
Clarksburg, WV
Cleveland, OH
Columbia, MO
Dallas, TX
Dayton, OH
Durham, NC
East Orange, NJ
Erie, PA
Fayetteville, AR
Fayetteville, NC
Fort Howard, MD
Gainesville, FL
Hampton, VA
Hines, IL
Indianapolis, IN
Iron Mountain, MI
Jackson, MS
Kansas City, MO
Lexington, KY
Little Rock, AR
Louisville, KY
Lyons, NJ
Madison, WI
Manchester, NH
Marion, IL
Martinsburg, WV
Memphis, TN
Miami, FL
Mountain Home, TN
Muskogee, OK
Nashville, TN
New York, NY
North Chicago, IL
Northampton, MA
Northport, NY
Orlando, FL
Perry Point, MD
Philadelphia, PA
Pittsburgh (Univ.), PA
Providence, RI
Richmond, VA
Salem, VA
Seattle, WA
Shreveport, LA
St. Louis, MO
Syracuse, NY
Tampa, FL
Togus, ME
Tuscaloosa, AL
Washington, DC
West Haven, CT
West Roxbury, MA
White River Jct., VT
Wilkes-Barre, PA
Wilmington, DE
Wood, WI

EPSC TELEPHONE FOLLOW-UP CALLS
JANUARY 83 THROUGH DECEMBER 86



EXPERIENCES OF A COMPREHENSIVE WIDE-AREA COMPUTER SYSTEM FOR PACEMAKER MONITORING

When passive data collection methods (registry) and active (monitoring) are combined, both can improve significantly, through synergies such as added cross-checks, early detection of problem models, and a large registry population for comprehensive histories of model performance and inclusive lists of pacemakers under advisory. To these functions, our Center adds a third critical element: we test any pacemakers explanted at VA hospitals. This impacts our other functions by improved records, hands-on insight into typical vs abnormal pacemaker behavior before and at end-of-life, feedback on adequacy of explant reasons.

Some key lessons of our experience are: the critical value of choosing an appropriate database structure; the need for verified reference files of generator and lead models, together with their attributes; database entry only by personnel familiar with pacemaker products and using linked files. Patient compliance is also significantly improved by personalizing service. Our prime experience has been the dynamic synergism in a comprehensive system with inherent feedback, crosschecks and reduction of duplicate efforts.

Introduction

The design of electronic cardiac pacemakers is continuing to undergo rapid development. Dual chamber pacing entered the marketplace in 1982; rate-responsive pacemakers began clinical use three years ago; automatic implanted cardiac defibrillators were approved only last year. Changes in pacemaker technology have significantly increased reliability, versatility and longevity of pulse generators.

Despite technological breakthroughs, cardiac pacemakers continue to have finite life expectancies for their generators, batteries and leads. Pacemaker replacement based on manufacturer's prediction of battery longevity would be unreliable and inefficient. Transtelephonic monitoring combined with periodic clinic examinations is the recommended procedure to determine when a generator or lead should be replaced. Emerging technologies have simultaneously complicated the task of recognizing battery depletion and pacemaker malfunctions, as manufacturers have adopted a wide variety of pacemaker end-of-life parameters and criteria, sometimes several for the same model depending on programmed mode.

In this setting, the Eastern Cardiac Pacemaker Surveillance Center (ECPSC) was established by the U.S. Veterans Administration (VA) for transtelephonic monitoring of veterans with implanted cardiac pacemakers. The ECPSC has also become the VA national center for testing pacemakers explanted at VA medical centers. This paper is written to share our experiences, which involve large numbers of patients, extensive computer usage to augment staff resources, and an integrated system of active surveillance and passive registry functions meshed with the feedback of explant testing. Separate sections discuss: (a) the major challenges and strategies to adequate pacemaker databases; and (b) the special synergies inherent in combining wide-area monitoring, registry and explant testing.

System Description

The ECPSC was created in May, 1982, as one of two regional VA centers for transtelephonic pacemaker monitoring of veterans. ECPSC coverage extends through the Eastern and Central time zones. By mid- January, 1983, the ECPSC was fully operational: the initial computer hardware and software had been developed, and a staff of seven assembled. During the next two years, the ECPSC assumed the task of testing pacemakers explanted in all VA hospitals. Maintenance of the national registry of VA pacemaker patients was transferred to the ECPSC in 1986, and a registrar added.

Currently, the ECPSC actively monitors some 3,500 patients, with a mean follow-up interval of 2.2 months between telephone checks. The average caseload per caller has been set at 800 patients. Details on daily operations of the surveillance program and its automation have been previously presented.1 The national VA registry includes clinical data on 20,500 present or former pacemaker patients.

The ECPSC computer system has been upgraded to a Digital PDP 11/44 processor with 4 Mb main memory, a 456 Mb fixed disk drive, and a 205 Mb removable- disk drive for backup. System multiplexors link 48 I/O ports directly to the central unit. One I/O port is reserved for direct communication and data transfer with the Medical Center's Marquette D-96 MUSE computer system, a multi-site, multi-user system for ECG analysis, storage and retrieval. MUSE software includes options for automated acquisition and analysis of pacemaker waveforms.

All ECPSC computer programs are written in MUMPS, a language designed for medical database applications. Extensive interface is made with the VA Fileman programs, a public-domain collection of MUMPS-language routines for database management. VA Fileman combines ease of novice use, compact storage of complex, indefinitely-often repeated data items, simply specified search and retrieval, and built- in aids to data accuracy including reliance on linked lists. The Fileman routines are easily incorporated into our own MUMPS coding to coordinate automated daily patient scheduling, followup reporting, and a variety of management reports for internal and external use.

The basic database structure of the ECPSC monitoring effort has been previously reported in detail.[1] The principal database structure consists of 18 primary data files. The first file, ECPSC PATIENTS, has 45 fields and 98 multiply-recurring subfields. Sixteen other files are pointer files, which provide coded choices for data entry to the ECPSC PATIENTS file and facilitate searches. Database fields and codes were defined jointly with the VA Western Cardiac Pacemaker Surveillance Center. Database codes were further selected for compatability with the European Pacemaker Registry codes.

A separate REGISTRY file has been set up coordinate to the ECPSC PATIENTS file, initially with data from an earlier, smaller-scale VA effort. Data conversion was a complex task, since original data entry had been free-form and by untrained clerks. With our expanded tasks, we have also added an EXPLANT TESTS file, linked to the REGISTRY and ECPSC PATIENTS files. The most important pointer files are our GENERATOR MODELS, V-LEAD MODELS, and A-LEAD MODELS files. Their fields hold a variety of information, including technical specifications, and information on the generators' beginning and end-of-life characteristics. Recently, we have linked two new files to each of the MODELS files: a MODELS UNDER RECALL OR ADVISORY file, and linked to that file a RECALLS, ADVISORY NOTICES AND AFFECTED MODELS file. A new SENSING AND CAPTURE PROBLEMS file is also linked to the MODELS and PATIENTS files, and enables us to spot problem trends among pacemaker models early by including all problems seen during routine monitoring.

Experiences

The reflections below are honed by several major ECPSC efforts in patient care over the past two or three years. First, several major recalls and advisories involving pacemaker generators and leads have occured recently, often specified by serial number. In response, we have notified hospitals of their patients at risk, and tightened monitoring intervals where appropriate, but we discovered and had to correct many missing serial numbers and lead data. Additionally, we have begun to use model and implant duration as a formal factor in setting optimal monitoring schedules. This involves performing statistics known as cumulative survival tables for each model.2 These statistics require complete and accurate dates of implant and explant. They further require knowledge of the reason for pacemaker removal, and cause of death, where applicable, which are very soft data. We have meshed our ECPSC data with that of an earlier VA registry, and consulted with other groups about their pacemaker databases. We have also begun to analyze our explant test file for results common to specific models, and for incidence of inappropriate explantation. Such analyses critically depend on accurate model, date and explant reason data.

The challenges of maintaining an adequate database for safe clinical care, accurate registry reports, and valid research studies can be grouped under five headings:

- maintaining data accuracy;
- maximizing data completeness;

- minimizing patient loss-to-followup;
- keeping track of pacemaker models and their characteristics
- keeping track of problem models.

Accuracy is a particularly vexing problem in pacemaker monitoring. Minute differences can be vital: one company's model 223 has a theoretical longevity of 6 years, model 223-01 has a longevity of 16.5 years, and 223-02 a longevity of 13.5 years. Especially confusing is the similarity in manufacturer's names: e.g., Cordis, Cardiac Pace, Cardio-Pace, and Cardiofrance. Pacemaker models often combine confusing combinations of letters and numbers. One company's model 22S is often reported as 225; lead model 6917J is often reported as 69171 or 69175. A similar problem afflicts some generator and lead serial numbers, which combine letters and numbers. Accuracy of serial numbers can be vital, since recalls of pacemaker products often specify serial numbers individually, or by range. If the serial number ND00012345H is under recall, no simple search will find it, when incorrectly entered as H0001234SH.

In general, the most common data entry errors fall into nine categories: skipped characters; erroneously repeated characters; transposed characters; variants (the right item, but in a fuller form, or with leading zeros, spaces, slashes or hyphens added or substituted for each other); confusion of similar names (such as Medcor and Medtronic); artificial data intended to represent missing data; incompatible data (such as one company's product attributed to another); data entered under the wrong field; and data entered from the wrong subject or event (such as data from a previous implant, entered under a new date).

The primary key to accuracy is experienced staff to enter and use the data. Staff with some familiarity with pacemaker data types will often recognize immediately any incongruities among a given generator model number, the attributed manufacturer, serial number, or date of implant, and will spot transposed fields, such as reversals of lead and generator information, or brand names substituted for manufacturers, models, or serial numbers. They will also intuitively recognize many variants and minor typographical errors. In a center for active patient monitoring, other trained staff also see the data periodically during checks, and can note incorrect or inconsistent entries, and additionally any incongruities with the observed pacemaker behavior, such as an inexplicable pacemaker firing rate.

A second antidote to data error is avoidance of free-form data fields. Use of linked lists of choices, wherever possible, restricts choices to reasonable answers, and makes a single item from a set of typographical variants, which also facilitates searches. Use of linked lists for data entry also cuts down on character transpositions, erroneous repetitions, and misread characters: for example, on trying to enter models 9584, and 225, one will find them absent, but 5984 and 22S occur under the appropriate manufacturers. Linked lists provide additional information as well, which serves as a double-check, as described below.

The third principal aid to data accuracy is the existence of double-checks. These either are intrinsic or involve comparing two sources of information. Pacemaker-related data is highly correlated: each generator or lead has been manufactured only between specific dates by a specific manufacturer, has serial numbers of a certain range or form, has a specific brand name or none, a theoretical longevity, and a polarity. Model numbers of specific ranges or forms are often restricted to specific manufacturers. Additionally, for a generator model, certain programmed parameters may have only one or a small number of real choices. All these can be visually or machine checked for consistency. As mentioned above, pacemaker waveforms, escape rates, and magnet rates seen on ECGs during patient checkups provide another intrinsic double-check on information consistency. Among the external sources available to us for data double-checks are the data from the predecessor VA registry; reports on generator explant tests performed by the manufacturers and sent to us, which often include a variety of implantation information; and the small data card provided sent to each patient by the manufacturer shortly after implant. When data conflicts are found, they are corrected by referring back to the original data sources, or from additional resources, as described below.

Completeness of data is equally as critical as data accuracy for patient care and statistical analysis, but is far easier to recognize. Three truisms are valid:

- reasons are more often missing than concrete facts;
- lead-related information is far more often omitted (and less reliable) than generator-related data;
- Data on explants and deaths is far less reported than implants.

Nevertheless, the hard-to-get data is often vitally needed: several lead models are currently under advisory notice. Additionally, reasons related to explants and/or death are needed to draw valid conclusions on pacemaker longevity and to spot any failure trends related to a generator or lead model.

The principal remedy is to recognize and use additional resources. These include the records of the implanting hospital; the patient himself, and his pacemaker card; a next-of-kin or alternate contact person--whose address and telephone number would be data fields in an active monitoring center's database; and the pacemaker manufacturers' records. Additionally, in the VA, the BIRLS report may be consulted, a comprehensive listing of monetary benefits given to families to defray burial expenses for a deceased veteran. Active monitoring centers have an inherent advantage in assuring data completeness unavailable to passive data collection systems: during regularly scheduled telephone checks patients or their families often provide the first and sometimes the only notice we get of a recent implant or death. Additionally, callers can note missing data on their terminals and informally ask the patient.

An equally important safeguard for data completeness is to plan an adequate database structure initially. Fields should be carefully chosen to reflect the full range of modern or foreseeable pacing parameters. Additionally, the database structure ought to take account of foreseeable requests for searches or statistical analyses, and the fields they would entail. For example, a registry can provide excellent data on pacemaker failures, because of its large population, but only if its fields include reasons for explants, cause of death, and similar fields. If a data field was not collected originally, it is virtually impossible to get it years later.

Minimizing patient loss-to-follow-up is a constant challenge in a society where 10% of the population moves each year. An active monitoring center has several advantages: it will discover the inability to contact a patient within about three months, while attempting a scheduled pacemaker check. At this point, one may still get a telephone message announcing a change of number, and mail forwarding should still be in effect. Also, because they derive a perceived health benefit from pacemaker checkups, patients will most often notify a monitoring center of any change in address.

Personalizing service has a clear impact on patient attitudes and compliance. In the ECPSC, each patient is assigned a specific caller. Birthday greetings are sent to all patients over 70. The ECPSC frequently gets notes from patients addressed to their callers, sometimes with photos and personal news, and nearly always saying that they are looking forward to their next pacemaker check.

Pure registries have almost insuperable problems in keeping their records current. They have no regular contact with the patients, and the patients and hospitals ordinarily have no incentive to notify them of end-events like explants or deaths. For our registry, we are sending to VA hospitals periodic lists of their pacemaker patients for whom we have no notice of death, for them to check against their records. For small-scale searches, we also have the BIRLS report as a source of death information.

Keeping track of pacemaker models and their specifications is arduous and frustrating:

- Some companies do not issue comprehensive lists of their past and present models. Companies have gone out of business and left no records of their models or implants, but still have implanted pacers.
- Pacemaker manufacturers often lack naming or numbering conventions. One company's models included: 4, 5, 3000, 4000-LRTP, 12B, APP-A, APP-B, LI-3D, UNIPOLAR A.
- Irnich has noted: "Model designations are not always used to indicate a change. For example, a new model number may be used despite the absence of change .....

> Similarly, there may be no change in model number even if there is (are) change(s) in those parameters decisive for follow-up."3

Nevertheless, a file of pacemaker generator models, and corresponding lead model files, are a cornerstone of any pacemaker database. These files should include manufacturer, dates manufactured, polarity, possible modes and programmable parameters and their permissible settings, and other consistency checks mentioned earlier. They should incorporate beginning- and end-of-life characteristics for an active monitoring center, and any applicable recall information.

There are many ways to keep abreast of new pacemaker models: current cardiology and pacing journals; manufacturers' mailing lists; contact with manufacturers' representatives and company librarians. For models no longer made, but still implanted in the population, the best sources are older copies of journals such as PACE, and old copies of manufacturers' literature.

Keeping track of problem pacemaker models is clearly vital to patient safety. The best printed sources are the weekly FDA Enforcement Report for recalls or advisories, and the bi-monthly STIMAREC Reports in PACE magazine for problem cases. We have a SENSING AND CAPTURE PROBLEMS file (linked to the MODELS files), which is automatically accessed by our callers during routine pacemaker checks if they note a sensing or capture problem. This file is periodically reviewed for failure trends not yet observed by other sources. Explant tests could also reveal problem models.

Synergies

A particularly exciting experience has been the productive interplay between our functions. We set up our registry database and forms in light of our active experience, and therefore included on the registry fields such as reason for explant and cause of death, which are both critical for statistical analysis of pacemaker failures. In turn, the registry draws information from all VA hospitals, and can draw our notice to an active patient who has moved from one VA hospital coverage to another. Explant testing impacts on our other functions not only by giving us the critical but often-unreported explant- related facts we need for accurate patient cover- age and failure analysis, but also by revealing specific generator failure patterns on the oscilloscope. Explant test results are also helpful to our callers as confirmation of their monitoring judgments that a pacemaker has shown end-of-life or malfunction indications. As im- plied in the previous section, each function also provides many data to supplement and crosscheck against data derived from our other functions.

Additionally, integration of the functions helps each by developing a total clinical outlook and thereby enhancing motivation and knowledge: the registry and explant testing are done by staff who know pacemaker technology and can see the impact of their results on patient care. They make few testing or data entry errors and can correct many errors on incoming forms.

Integration clearly promotes efficiency and economy. Maintaining one database structure, rather than two, is clearly better. Especially, maintaining only once the key files of pacemaker models and their specifications, and the file of problem models, rather than twice, saves many manhours. Integration reduces duplicate efforts and paperwork: hospitals now need fill out only one sheet to update both our registry and monitoring records. In time, the sheet will eliminate a separate form sent to us with explanted units.

In summary, monitoring today's complex pacemaker technology requires a carefully chosen database whose entries are highly accurate and complete. Developing and maintaining that database are highly challenging, but resources and strategies to do so exist. In addition, combining the functions of registry, monitoring and testing develops numerous synergisms, enhances efficiency, and strongly promotes database quality.

The Center invites further dialog and cooperation with all interested groups developing pacemaker databases. Common efforts mutually enhance each other's efficiency, accuracy and completeness of data, and eliminate redundant efforts.

PACEMAKER SURVEILLANCE

REGISTRY AND REVISION VETERANS ADMINISTRATION

PART I Complete and mail to appropriate Pacemaker Center

Date Completed ____________

___ Patient registration
___ Patient death
___ Patient transfer
___ Patient data change
___ Pacing malfunction

___ Pacemaker implant
___ Pacemaker replacement
___ Pacemaker revision w/o removal
___ Pacemaker explant, no replacement
___ Pacemaker reprogramming

___ Lead implant
___ Lead replacement
___ Lead revision
___ Lead explant, no replacement
___ Clinic measurements

PACEMAKER TELEPHONE FOLLOW-UP PROVIDED BY:

___ VA Eastern Pacemaker Surveillance Center and Registry
50 Irving Street, N.W., Washington, D.C. 20422

___ VA Western Pacemaker Surveillance Center
4150 Clement Street, San Francisco, CA 94121

___ Local VAMC — Fill in Part I only & mail for Registry

PATIENT NAME

____
(Last) (First) (Mid. Initial)

____
(Street) (Apt. #)

____
(City) (State) (Zip Code)

Date of Birth ________ Sex ________
rk Phone ( ) ________ Home Phone ( ) ________
Social Security # ____ ____ ____
Referring VA Medical Center ____________
Responsible Physician

____
(First) (Mid. Initial) (Last)

Phone ( ) ________ or FTS ________

Pulse generator:

Manufacturer ________ Model # ________
Serial # ________ Date ________
Implanting Hospital ____________
Beginning of life Magnet rate ________ End of life Magnet rate ________
Number of pulse generators, incl. present ________
Date of initial implant ________
Date of last previous implant ________

Atrial lead:

Manufacturer ________ Model # ________
Serial # ________ Date ________

Ventricular lead:

Manufacturer ________ Model # ________
Serial # ________ Date ________

Comments: ____________________

CIRCLE APPROPRIATE CHOICES ON BACK

PART II Fill in below for follow-up by VA Pacemaker Surveillance Center

Alternate Contact:

____
(Last) (First) (Mid. Initial)

____
(Street) (Apt. #)

____
(City) (State) (Zip Code)

Relationship ____________
Work Phone ( ) ________ Home Phone ( ) ________

Telephone Transmitter

Manufacturer ________ Model # ________

Implant Parameters:	Atrial lead	Ventricular lead
reshold in volts	________	________
hreshold in mAs at .5 ms pw	________	________
Resistance at 5 Volts	________	________
R-wave or p-wave amplitude (mV)	________	________
PSA used	________	________

Programmed Settings: Date ________

	Atrial	Ventricular
Pulse width	________	________
Amplitude	________	________
Sensitivity	________	________
Refractory period	________	________
Lower rate limit	________	
Upper rate limit	________	
A-V Delay	________	
Hysteresis	________	
Mode (circle on back)	________	

Clinic Measurements: Date ________

	Atrial	Ventricular
Pulse width	________	________
Amplitude	________	________
Ratio (T/L)	________	________
Threshold width	________	________
and/or Amplitude	________	________
Capture	________	________
Sense	________	________

Rate no magnet ________ bpm A-V Delay ________
Rate magnet ________ bpm A-V Delay ________
Battery voltage ________ Resistance ________

VA Form 10-5548A (Test)

Pacing Indication (EKG):

1 Normal Sinus Rhythm
2 1° Heart Block
3 2° Heart Block-Unspecified
4 2° Heart Block-Wenckebach
5 2° Heart Block-Mobitz
6 CHB-QRS Unspecified
7 CHB-Narrow QRS
8 CHB-Wide QRS
9 CHB-Intermittent
10 Asystole
11 Bundle Branch Block-Unspecified
12 RBBB-Incomplete
13 RBBB-Complete
14 LBBB-Complete
15 Left Anterior Hemi-Block
16 Left Posterior Hemi-Block
17 RBBB + LAHB + Normal PR
18 RBBB + LPHB + Normal PR
19 RBBB + LAHB + Long PR Interval
20 RBBB + LPHB + Long PR Interval
21 LBBB + Long PR Interval
22 Sick Sinus Syndrome-Unspecified
23 Sick Sinus Syndrome-SA Exit Block
24 Sick Sinus Syndrome-SA Arrest
25 Sick Sinus Syndrome-Bradycardia
26 S S S - Bradycardia/Tachycardia
27 Sick Sinus Syndrome + AV Block
28 Ventricular Extrasystoles
29 Ventricular Tachycardia
30 Paroxysmal VF
31 Atrial Flutter/Fibrillation + Bradycardia
32 Atrial Tachycardia
33 Pre-excitation Syndrome
34 Rhythm (Other) ____________

Pacing Failure (EKG):

1 Loss of capture
2 Undersensing
3 Oversensing
4 Rate decrease
5 Rate increase

Previous History:

1 Syncope
2 Dizzy Spells (Presyncope)
3 Bradycardia
4 Tachycardia
5 Prophylactic
6 Heart Failure
7 Cerebral Dysfunction
8 Angina
9 Other ____________

Risk Factors:

1 Diabetes
2 COPD
3 Hypertension
4 Smoking (# pack years) ______

Indication for
Generator Change:

1 Elective
2 Elective for system change
3 Elective with electrode problem
4 Mechanical protrusion
5 Infection-ulceration
6 Electromyographic inhibition
7 Extracardiac stimulation
8 Failure-Low output - No capture
9 Failure-Slow rate
10 Failure-Slow magnetic rate
11 Failure-Fast rate
12 Failure-Fast magnetic rate
13 Failure-Connector fault
14 Failure-Encapsulation
15 Failure-Undersensing
16 Failure-Oversensing
17 Failure-Magnetic switch
18 Failure-Programming
19 Failure-Battery (E.O.L.)
20 Failure-Battery (Premature)
21 Recall
22 Other ____________

Implantation Etiology:

1 Conduction Tissue Fibrosis
2 Ischaemic
3 Post-infarction
4 Surgical
5 Congenital
6 Myocardopathy
7 Valvular Heart Disease
8 Carotid Sinus Syndrome
9 Idiopathic
10 Other ____________

Indication for
Electrode Change:

1 Elective
2 Displacement
3 Exit block
4 Connector failure
5 Infection-ulceration
6 Electromyographic inhibition
7 Extracardiac stimulation
8 Perforation
9 Undersensing
10 Insulation break
11 Conductor break
12 Recall
13 Other ____________

Pacing Mode:

1 AAI 5 AAT 9 AOO
2 VVI 6 VVT 10 VOO
3 DDD 7 VAT 11 DOO
4 DVI 8 VDD 12 Other______

Reasons for Reprogramming:

1 Reduce output to decrease energy consumption
2 Increase output for better margin of safety
3 Increase output to eliminate loss of capture
4 Sensitivity improved due to loss of sensing
5 Sensitivity improved for better margin of safety
6 Sensitivity reduced due to oversensing
7 Lower rate increased to avoid fatigue
8 Lower rate increased to control arrhythmia
9 Lower rate decreased to allow normal rhythm
10 Lower rate decreased to prevent angina
11 Lower rate decreased to control arrhythmia
12 Rate response change to improve exercise
13 Upper rate limit increased to improve exercise
14 Upper rate limit decreased to limit reentry
15 Upper rate limit decreased to avoid angina
16 AV change to improve cardiac function
17 AV change to allow normal AV conduction
18 Change mode from ________ to ________
19 Other ____________

Indication for
File Closure:

1 Death Date ________
Cause of Death ____________

(choose one)
___Related to pacemaker
___Related to electrode
___Cardiac-unrelated to pacemaker
___Non-cardiac-unrelated to pacemaker
___Cause unknown
(choose one)
___Sudden-within one hour of symptoms
___Non-sudden
___Unknown
2 Lost to follow-up
3 Pacemaker removed
4 Discharge for other reason ____________

```
Fileman, v 16.72

Select OPTION:  SEARCH FILE ENTRIES

OUTPUT FROM WHAT FILE:  PACEMAKER PATIENT

-A-  SEARCH FOR PACEMAKER PATIENT FIELD:  PATIENT REGISTRY STATUS ["FOLLOW UP"

-B-  SEARCH FOR PACEMAKER PATIENT FIELD:  PACEMAKER IMPLANTATION (multiple)

    -B-  SEARCH FOR PACEMAKER IMPLANTATION SUB-FIELD:
                                   VENT. LEAD MANUFACTURER (multiple)

        -B-  SEARCH FOR VENT. LEAD MANUFACTURER SUB-FIELD:
                                   V LEAD MODEL [6972

        -C-  SEARCH FOR VENT. LEAD MANUFACTURER SUB-FIELD:

    -C-  SEARCH FOR PACEMAKER IMPLANTATION SUB-FIELD:
                                   VALUE OF LAST V LEAD SERIAL<34060

    -D-  SEARCH FOR PACEMAKER IMPLANTATION SUB-FIELD:

-D-  SEARCH FOR PACEMAKER PATIENT FIELD:

IF:  A&B&C
IF:

DO YOU WANT THIS SEARCH SPECIFICATION TO BE CONSIDERED TRUE FOR CONDITION B
        1) WHEN AT LEAST ONE OF THE 'PACEMAKER IMPLANTATION' MULTIPLES
SATISFIES IT
        2) WHEN ALL THE 'PACEMAKER IMPLANTATION' MULTIPLES SATISFY IT
CHOOSE 1 2:  1//1

DO YOU WANT THIS SEARCH SPECIFICATION TO BE CONSIDERED TRUE FOR CONDITION B
     1) WHEN AT LEAST ONE OF THE 'VENT. LEAD MANUFACTURER' MULTIPLES SATISFIES
IT
        2) WHEN ALL OF THE 'VENT. LEAD MANUFACTURER' MULTIPLES SATISFY IT
CHOOSE 1 2:  1//1

DO YOU WANT THIS SEARCH SPECIFICATION TO BE CONSIDERED TRUE FOR CONDITION C
     1) WHEN AT LEAST ONE OF THE 'PACEMAKER IMPLANTATION' MULTIPLES SATISFIES
IT
        2) WHEN ALL OF THE 'PACEMAKER IMPLANTATION' MULTIPLES SATISFY IT
CHOOSE 1 2:  1//1

OR:

STORE RESULTS OF SEARCH IN TEMPLATE:6972LIST
ARE YOU ADDING '6972LIST' AS A NEW SEARCH TEMPLATE:YES

SORT BY: REFERRING VAMC
START WITH REFERRING VAMC: FIRST//
WITHIN REFERRING VAMC, SORT BY: NAME
START WITH NAME: FIRST//
WITHIN NAME, SORT BY:
```

```
FIRST PRINT FIELD: [V LIST
WANT TO EDIT "VLIST" TEMPLATE? NO//
```

Figure 1: This is the only computer dialog necessary to produce a listing as complicated as "All the VA pacemaker patients under current PSC follow-up, who have Medtronic Model 6972 V-lead, with serial number under 34059, and arranged by referring medical center". The computer user needs to type in only the underlined letters to generate the report, shown in Figure 2.

NAME (LAST, FIRST, MI)	REFERRING VA CENTER	V LEAD IMPLANT DATE	V LEAD MFR	V LEAD MODEL NUMBER	V LEAD SERIAL NUMBER
J########, E###	BALTIMORE MD	JUL 15, 80	MEDT	6972-58	ND0017625V
J####, C######	BALTIMORE MD	MAR 23, 83	MEDT	6972-58	
K######, A####	BALTIMORE MD	MAR 4, 83	MEDT	6972-58	ND0027743V
L#########, I##	BALTIMORE MD	MAY 19, 81	MEDT	6972-58	ND0010648V
B#####, O###	COLUMBIA MO	JUN 2, 81	MEDT	6972-58	ND0015138V
B###, G#######	COLUMBIA MO	DEC 3, 81	MEDT	6972-58	ND0023419V
C#########, J##	COLUMBIA MO	APR 24, 81	MEDT	6972-58	ND0015385V
C#####, J#####	COLUMBIA MO	JUL 27, 82	MEDT	6972-58	ND0030748V
C#####, M#####	COLUMBIA MO	DEC 21, 79	MEDT	6972-58	
C#######, R####	COLUMBIA MO	FEB 26, 81	MEDT	6972-58	ND0012140V
D###, J###	COLUMBIA MO	JUL 14, 82	MEDT	6972-58	ND0030012V
D####, J###	COLUMBIA MO	AUG 17, 81	MEDT	6972-58	ND0016090V
F##########, A#	COLUMBIA MO	SEP 9, 81	MEDT	6972-58	ND0022539V
G#####, M#####	COLUMBIA MO	JAN 3, 84	MEDT	6972-58	
H########, G###	COLUMBIA MO	JUL 23, 82	MEDT	6972-58	ND0030758V
H#####, N####	COLUMBIA MO	FEB 13, 81	MEDT	6972-58	
J########, F###	COLUMBIA MO	APR 6, 82	MEDT	6972-58	ND0030101V
[illegible]###, A#####	COLUMBIA MO	AUG 3, 81	MEDT	6972-58	ND0016101V
L####, C######	COLUMBIA MO	NOV 25, 81	MEDT	6972-58	ND0023264V
M######, J###	COLUMBIA MO	JAN 19, 82	MEDT	6972-58	
P####, F######	COLUMBIA MO	SEP 2, 81	MEDT	6972-58	ND0016080V
S####, E###	COLUMBIA MO	OCT 28, 81	MEDT	6972-58	
S######, W####	COLUMBIA MO	MAR 5, 81	MEDT	6972-58	
T#####, C###	COLUMBIA MO	SEP 9, 81	MEDT	6972-58	
Z#####, S#####	COLUMBIA MO	MAY 19, 81	MEDT	6972-58	ND0015356V
C###, B##	HINES IL	OCT 12, 83	MEDT	6972-58	
C########, C##	LITTLE ROCK AR	FEB 12, 82	MEDT	6972-58	ND0030438V
C####, W####	LITTLE ROCK AR	APR 12, 82	MEDT	6972-58	ND0033971V
J##########, R#	LITTLE ROCK AR	FEB 12, 82	MEDT	6972-58	ND0021287V
M#########, W##	LITTLE ROCK AR	MAY 8, 81	MEDT	6972-58	ND0012050V
B#####, A#####	RICHMOND VA	JUN 2, 81	MEDT	6972-58	ND0016394V
C#####, N#####	RICHMOND VA	FEB 2, 82	MEDT	6972-58	ND0027880V
C############,	RICHMOND VA	AUG 6, 81	MEDT	6972-58	ND0016417V
C######, C####	RICHMOND VA	MAY 22, 81	MEDT	6972-58	ND0012834V
F##, W#######	RICHMOND VA	JUN 5, 81	MEDT	6972-58	ND0010364V
G######, G####	RICHMOND VA	MAR 3, 81	MEDT	6972-58	ND0016933V
H#####, L#####	RICHMOND VA	AUG 7, 81	MEDT	6972-58	ND0019241V
M####, C######	RICHMOND VA	DEC 15, 81	MEDT	6972	ND0024392V
S######, C####	RICHMOND VA	NOV 5, 81	MEDT	6972-58	ND0023512V
[illegible]####, W####	RICHMOND VA	OCT 2, 81	MEDT	6972-58	ND0021054V
[illegible]###-####, G W	RICHMOND VA	DEC 18, 81	MEDT	6972-58	ND0025508V
[illegible]########, R###	RICHMOND VA	APR 28, 81	MEDT	6972-58	ND0014890V

```
                                V LEAD        V     V LEAD    V LEAD
NAME (LAST,      REFERRING      IMPLANT       LEAD  MODEL     SERIAL
FIRST, MI)       VA CENTER      DATE          MFR   NUMBER    NUMBER
------------------------------------------------------------------------------
A#####, E####    SALEM VA       JAN  4, 82    MEDT  6972-58

E########, L###  SHREVEPORT LA  MAR 24, 82    MEDT  6972-58   ND0013969V
H#####, W#####   SHREVEPORT LA  JUN  2, 81    MEDT  6972-58   ND0016891V
W########, A W   SHREVEPORT LA  MAR  2, 82    MEDT  6972-58   ND0013606V

H#########, J##  ST LOUIS MO    APR 15, 82    MEDT  6972-58   ND0029079V

B####, W#####    TAMPA FL       MAY 14, 82    MEDT  6972-58   ND0033345V
N###, J#### M    TAMPA FL       OCT  1, 81    MEDT  6972
```

Figure 2: Computer output generated by the dialog in figure 1. These are the VA pacemaker patients under active PSC follow-up, with a Medtronic 6972 V-lead whose serial number is under 34059, and all arranged by referring medical center. The PSC files can be searched just as simply for nearly any combination of data conditions, to provide an almost limitless array of possible reports quickly and accurately.

VETERANS OF FOREIGN WARS OF THE UNITED STATES

OFFICE OF THE DIRECTOR

STATEMENT OF

JAMES N. MAGILL, DIRECTOR
NATIONAL LEGISLATIVE SERVICE
VETERANS OF FOREIGN WARS OF THE UNITED STATES

BEFORE THE

SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE
COMMITTEE ON VETERANS' AFFAIRS
UNITED STATES HOUSE OF REPRESENTATIVES

WITH RESPECT TO

THE VETERANS ADMINISTRATION'S DEPARTMENT OF MEDICINE AND SURGERY'S ACTIVITIES
CONCERNING THE DECENTRALIZED HOSPITAL COMPUTER PROGRAM AND THE
INTEGRATED HOSPITAL SYSTEM

WASHINGTON, D. C. APRIL 8, 1987

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to present the views of the Veterans of Foreign Wars of the United States with respect to the Veterans Administration's (VA) Department of Medicine and Surgery's automated data processing system. As you know, the VA currently has a decentralized hospital computer program (DHCP) in 169 of its 172 medical centers. Recently, questions have been raised as to whether an integrated hospital system (IHS) would better serve the VA in carrying out its mandated task of treating our nation's veterans. At the outset, Mr. Chairman, what is of paramount importance to the Veterans of Foreign Wars is that the VA provides the highest quality care possible to our nation's veterans in a timely manner. It is also extremely important to the VFW that the VA ultimately achieve its goal of networking the entire agency as one system. We do not advocate the VA's utilization of any one particular computer system but only

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VFW MEMORIAL BUILDING ● 200 MARYLAND AVENUE, N.E. ● WASHINGTON, D. C. 20002 - 5799 ● AREA CODE 202-543-2239

insist that whichever system is adopted meets the needs of the VA and its veteran patient.

Recently, a concentrated effort has been generated challenging the capability of the DHCP to effectively meet the needs of the VA. There are those who espouse that the IHS is far superior to DHCP and better suited to improving the VA's ability to better serve the veteran patient. While the VFW does not argue the point that an IHS does have certain advantages over the DHCP, we do contend that several existing factors must be taken into consideration before the decision is made as to whether DHCP should be replaced by IHS.

As you know, the VFW has been critical of the lack of timeliness in implementing an automated data processing system into the VA's Department of Medicine and Surgery. We believe much "foot-dragging" has occurred and that the VA has been negligent in providing service organizations with progress reports, all leading to the delay in the implementation process. The decision to replace the 169 DHCPs currently under installation will only serve to further delay the program. The VFW is adamantly opposed to any further delays and will not support any action that contributes to such.

Proponents of the IHS state their system can better serve the VA and the veteran. While it may be true IHS is more functional, one must also consider the cost factor and the performance of the system already in place. Information available to us indicates that IHS will have a greater total cost than the DHCP. At the same time, VFW Field Representatives who routinely survey VA medical centers, along with other outside parties, report high "user satisfaction" with DHCP. The VA itself has stated DHCP adequately meets their needs. For these reasons, the VFW questions the wisdom in abandoning an existing system which has the full support of its users and is deemed adequate for a more costly system.

We also question the prudence of the VA changing systems now after having invested $200 million over a four-year period in the DHCP. It has been acknowledged that most of the DHCP hardware would have to be scrapped should the change occur. We believe it would be more responsible to upgrade the current existing equipment, which all computer systems demand, rather than starting from scratch.

Mr. Chairman, because DHCP is already a fixture in 169 out of 172 medical centers; since it has been stated DHCP meets the VA's needs and can be enhanced in later years to meet future demands; because DHCP is, for the most part, completely in place and will not necessitate further delays; and, since the VA has already invested over $200 million in DHCP, the VFW believes the veteran patient, as well as the VA, will be better served by the VA carrying out its decentralized hospital computer program. As stated previously, DHCP is in place and working. Any change at this point will only cause delays and be detrimental to the veteran patient.

This concludes my statement. I will be happy to respond to any questions you may have. Thank you.

STATEMENT OF
DAVID W. GORMAN
ASSISTANT NATIONAL LEGISLATIVE DIRECTOR
FOR MEDICAL AFFAIRS
DISABLED AMERICAN VETERANS
BEFORE THE
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE
OF THE
COMMITTEE ON VETERANS AFFAIRS
U.S. HOUSE OF REPRESENTATIVES
April 8, 1987

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

On behalf of the over 1.1 million members of the Disabled American Veterans and its Ladies' Auxiliary, may I say that we appreciate this opportunity to appear here today to relate our views on the Veterans Administration's efforts to provide automated information systems support to their medical centers.

In your letter of invitation to testify our views were solicited regarding the VA's activities concerning the Decentralized Hospital Computer Program (DHCP) and the Integrated Hospital System (IHS).

Mr. Chairman, in view of the recent controversy that has arisen in Congress and other quarters concerning which system (DHCP versus IHS) will best meet the needs of the VA's health care system, the DAV conducted site surveys of five (5) VA medical centers (VAMC) during March 1987.

These surveys were conducted at VAMCs Saginaw, Michigan; Allen Park, Michigan; Hines Illinois; Philadelphia, Pennsylvania; and Tampa, Florida.

Mr. Chairman, the purpose of these surveys was quite simple: to determine the capabilities of DHCP and IHS to provide enhanced patient care.

Decentralized Hospital Computer Program

DHCP was initiated in the VA during February 1982 to provide timely and cost-effective automated data processing (ADP) technology and resources to support clinical and administrative functions at the VA medical center level, and management functions at all levels.

The DHCP concept involved developing a modular set of computer programs which will evolve from the initial priority function packages (CORE) into an integrated medical care system which will provide comprehensive support for a medical center's specific clinical and administrative automation needs, as well as for system-wide management information.

The major objectives of the DHCP design are:

* development of application software that is standardized and exportable to all VAMCs, yet flexible enough to be adaptable to each individual health care facility;

* standard data elements, simplifying data exchange and interchange in the aggregation of management information;

* an integrated data base permitting patient information to be entered once at the time of the veteran's registration at the facility and accessible later by other functional hospital areas;

* equipment requirements that do not lock the VA into dependence on any specific vendor, thus facilitating procurements; and

* a tool to assist administrative personnel and health care providers in the performance of the VA's mission to provide timely, quality health care services to disabled veterans.

As we understand it, Mr. Chairman, the development of DHCP has three basic stages and systems: Initial/Full CORE, Enhanced and Comprehensive.

CORE may be described as consisting of medical center functions -- medical administration service, pharmacy and clinical laboratory -- that were most critically in need of automated support.

Enhanced DHCP will provide automated support for primary clinical services which are generally considered to be part of the therapeutic regime, as well as for certain management and administrative functions that cut across all hospital services.

Finally, Comprehensive DHCP will provide automated support in the form of optional modules which will address clinical or support services not generally involved in carrying out physicians' direct orders.

Integrated Hospital System

Mr. Chairman, the Integrated Hospital System (IHS) is a program administered by the VA's Department of Medicine and Surgery (DM&S) involving the acquisition, operation and evaluation of commercially available hospital systems in three VA medical centers.

The IHS program was initiated based on Congressional guidance to evaluate the ability of the private sector to provide a functional and cost-effective hospital information system to meet the automation needs of VA medical centers.

In August 1984 contracts were awarded to:

* Shared Medical Systems (SMS) -- VAMC Philadelphia, Pennsylvania;

* McDonnell Douglas Automation (McAUTO) -- VAMC Saginaw, Michigan; and

* Electronic Data Systems (EDS) -- VAMC Big Spring, Texas

The IHS systems are developed in two distinct phases. Phase one involves the installation of mandatory modules which will automate critical patient care functions in the medical center. The mandatory modules include medical administration service functions, clinical laboratory, pharmacy and ward order entry. Phase two will continue with the installation of optional modules which will automate certain clinical functions which have been determined less critical, as well as most administrative functions.

As you are aware, Mr. Chairman, a formal evaluation of the IHS system is scheduled to be completed by Arthur Anderson and Company by September 30, 1987.

As indicated earlier, the DAV has recently completed site visits of five (5) VAMCs, three (3) of which utilize DHCP and two (2) which utilize IHS.

There was one common conclusion gained from our visit of each facility; users of each system were extremely pleased with the increased efficiency of hospital operations provided by an automated hospital information system. Without question, each facility is extremely pleased with the system it is currently utilizing.

Of the facilities visited, Mr. Chairman, we were most impressed with the systems in operation at VAMC Saginaw, Michigan (IHS) and Tampa, Florida (DHCP).

A common finding at both of these facilities was the enthusiasm, dedication and commitment of management to totally support their respective system. Additionally impressive was the level of competency of the automated data processing staff that lent technical support and training to users.

Mr. Chairman, our singular concern regarding the VA's effort to automate their medical centers is enhanced patient care. In our view, this is occurring at the Saginaw and Philadelphia installations and is likewise occurring at all other VAMCs, although in varying degrees.

We have had the opportunity to review the assessment of DHCP and IHS conducted by Booz, Allen and Hamilton; Price Waterhouse; the VA Inspector General; and the Surveys and Investigation Staff of the House Committee on Appropriations. Additionally, we have been briefed by the VA and McDonnell Douglas regarding their respective systems.

Quite frankly, Mr. Chairman, the information we have been presented is confusing and contradictory. Therefore, we do not feel to be in a position to offer a firm opinion on the total cost or time required to install either DHCP or an IHS system in all 172 VAMCs.

We are, however, in a position to opine that DHCP is certainly capable of meeting the needs of the VA and, specifically, the Department of Medicine and Surgery. This can be accomplished only if certain conditions are recognized and resolved.

First, there appears to be an urgent need for the VA to install additional hardware to support the necessary software required for more clinical and administrative applications to become functional.

Second, the VA must make a commitment to dedicate sufficient resources to support adequate ADP staffing at all VAMCs to provide needed technical support and training functions. Sufficient and competent staff are vital to the success of DHCP.

Third, the absence of centralized planning, direction and control has, in our opinion, had a negative impact on DHCP. In this regard, we understand that a proposal is currently being evaluated that would significantly strengthen DHCP management. We would urge the VA to move swiftly in the direction of improved management of DHCP in order for it to remain a viable system.

Mr. Chairman, we fully realize there are mixed opinions and uncertainties as to which medical computer system would best serve the needs of the VA.

Quite frankly, the DAV does not necessarily support or oppose any particular system or approach. Our singular concern is that the VA be provided with the most viable and efficient computer system available to enhance the mission of providing quality health care services to eligible veterans.

Mr. Chairman, we are very concerned that until such time as a consensus is reached as to what system will be utilized by the VA, that the DHCP system not be compromised. To this end, we recognize the need for the procurement of additional hardware to maintain the process of hospital automation.

Therefore, we fully support the VA's plans to obligate Fiscal Year 1987 appropriated funds for the purchase of additional needed equipment.

In conclusion, Mr. Chairman, we have always envisioned the process of automating VAMCs as a logical and orderly step to realize full automation of the entire agency, i.e., Department of Veterans Benefits and Department of Memorial Affairs.

Such an endeavor must allow for "networking" of all functions of each individual department that will permit all VAMCs, regional offices, as well as VA Central Office to talk and communicate with each other electronically. Such a process will enable the VA to provide more timely and accurate services to the population it is mandated to serve, this nation's veterans.

Our enthusiasm for this process is heightened by the realization that veterans' service organizations (VSOs) should have equal access to the system in those instances where a valid power-of-attorney is a matter of record. By permitting the VSOs access to a veteran's total record -- medical and benefits -- the quality and timeliness of representation and delivery of VA services will be further enhanced and prove most beneficial to the veteran.

Mr. Chairman, as the VA moves forward in its planning of automation within the agency, we would strongly urge them to give serious consideration, as well as have meaningful discussions with the veterans' service organizations, regarding VSO ability to utilize the VA's computer system.

Mr. Chairman, this concludes my testimony and I again wish to thank you for allowing us the opportunity to present our views regarding this most important matter.

Ronald E. Ginsburg MD
103 Euclid Avenue
P.O. Box Y
Altamont, New York 12009

April 7, 1987

Honorable Gerald Solomon
Gaslight Square
Saratoga Springs, New York 12866

Dear Mr. Solomon:

I am Chief of Anatomic Pathology at the VA Medical Center, Albany, New York and an Associate Professor of Pathology at Albany Medical College. As one who helped create and one who uses the VA Decentralized Hospital Computer Program (DHCP) I believe that it serves our veterans well.

DHCP is composed of an integrated patient data base. It maintains information on admissions, discharges, transfers, clinic scheduling, patient medications, laboratory test data, radiology reports, nutritional data and mental health histories. The computerized system provides for rapid retrieval of patient information and gives physicians, nurses, and others caring for our veterans, information at their fingertips that may not otherwise be easily available in a timely manner. If DHCP were stopped today the ability to provide the high level of patient care in VA Medical Centers would suffer greatly.

Perhaps it would be best to illustrate these statements by taking you through some routine procedures available via DHCP to the professionals caring for a hypothetical VA patient. I would like to stress that this patient represents the typical veteran we provide care for at VA Medical Centers throughout the country.

Mr. Smith is a 67 year old veteran who attends the General Surgery Clinic. Twelve months ago a rectal cancer was found. An operation was performed during which his rectum and distal portion of large intestine was removed and a colostomy created. The tumor was completely removed and no evidence of tumor spread was found at that time. Every three months he has a blood test (carcinoembryonic antigen or CEA) to check for the recurrence of his tumor, since elevate blood values suggesting recurrence may appear long before there is clinical evidence of recurrent intestinal cancer. The patient is sitting in the clinic and before his surgeon, Dr. Jones examines Mr. Smith he wants to review the medical record. However the record is nowhere to be found.

Dr. Jones goes to the computer terminal and in an instant retrieves Mr. Smith's cumulative laboratory values for CEA and other lab tests, reviews the most recent x-rays and medications and is then ready to examine Mr. Smith. Examination is normal except for the presence of a colostomy. The last CEA is at the upper limits of normal and a repeat test is ordered.

The patient is rescheduled via the DHCP for his next clinic appointment. Dr. Jones, while reviewing cumulative laboratory data on his colon cancer patients on the computer monitor, the following day, notices that Mr. Smith's CEA test performed earlier in the day is significantly elevated. Then Dr. Jones at the same terminal selects the function to obtain Mr. Smith's telephone number, calls the patient and asks him to come to the hospital for further evaluation of the status of the cancer.

Without DHCP three or more months may have passed before Mr. Smith may have been seen again. Mr. Smith's admission procedures go smoothly since most information required for admission is in DCHP and he is quickly scheduled via computer for special radiologic procedures. A small mass is found in the liver and a biopsy is performed. The surgical pathologist at the time of interpretation of the biopsy can review, thanks to DHCP, the cumulative lab data including the CEA results, the special x-ray reports and rapidly retrieve the prior surgical pathology report and slides from the previous abdominal operation. The biopsy shows a malignant tumor appearing the same as the one in the rectum and the patient is referred to the appropriate medical specialist for further treatment.

There are additional benefits of DHCP and to illustrate some of them I would like to use the blood bank module of the laboratory software package. All VA Medical Centers have a blood transfusion service. In addition there are several that have a blood donor program. DHCP keeps a complete history of blood donors and their donations. The program follows the blood donation from collection, processing and testing to inventory, patient crossmatching and transfusion. Complete records of all transactions for a unit of blood are kept by the program.

DHCP, in addition to automating the record keeping, increases productivity, provides valuable donor information, and serves as an invaluable management tool. If all of this information had to be retrieved by staff personnel from patient paper records it could result, as has sometimes been the case in the past, in potentially serious or even fatal blood bank errors. For example it can lead to a patient getting a wrong unit of blood with potentially lethal consequences. DHCP does considerable checking throughout the donation-processing-transfusion sequence to detect discrepancies with the goal of eliminating clerical error.

Some advantages with using DHCP as a blood banking tool are:

- -Donor units cannot be released by the system until all of the appropriate testing is completed and is acceptable thus preventing possible transmission of diseases such as hepatitis or acquired immune disease (AIDS).
- -An automatic check of current blood type test results for both donor and patient against historical records to ensure that there is no discrepancy thereby preventing possible fatal error.
- -Transfusion requests upon receipt are evaluated by DHCP by checking the patients' most recent preselected laboratory results against predetermined criteria for each blood component.
- -Inappropriate units of blood cannot be selected for crossmatch and transfusion thereby preventing possible transfusion reactions.
- -The common (ABO/Rh) and other special blood types on all units selected for a patient are checked against the patient's historical blood bank record prior to issue for transfusion in order to make sure that all of the testing necessary has been performed with suitable results thereby preventing a possible transfusion reaction.

The blood bank module generates many reports, including transfusion statistics. Just to produce manually the two reports of the cost of blood used by medical specialty and the effectiveness of blood transfusion would require such an enormous amount of time and personnel resources that the cost becomes prohibitive.

Users of the system are extremely satisfied and feel that any disruption of DHCP would be detrimental to patient care. A chief of Urology uses DHCP to obtain information for 75% of his clinic patients. This information includes laboratory and radiology results, confirmation of clinic appointments, admissions, and telephone numbers. Before DHCP he had an almost impossible task of find an out-of-town patient telephone number. For his patients with prostate and urinary bladder cancer he follows trends in certain laboratory tests to indicate improvement or worsening of the disease. Physicians are using DHCP to follow bacterial infections in patients and can determine with the system trends in antibiotic resistance.

I would like to offer any assistance I can to help keep alive this valuable tool for use in providing the finest medical care available to our veterans.

Sincerely,

Ronald E Ginsburg

Ronald E. Ginsburg, MD

APR 8 1987

The American Legion

For God and Country

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(202) 861-2700 ★

April 1, 1987

Honorable G. V. "Sonny" Montgomery, Chairman
House Veterans Affairs Committee
335 Cannon House Office Building
Washington, DC 20515

Dear Mr. Chairman:

This letter is in response to your March 25 invitation to testify before the Hospitals and Health Care Subcommittee on April 8. The American Legion believes it is absolutely necessary that VA complete, as expeditiously as possible, the computerization of Department of Medicine and Surgery operations to insure that modern medicine will be practiced in the most cost effective manner throughout VA's health care delivery system.

We do not believe it is appropriate that our organization testify on this matter at this time. The ongoing discussion of competing computer systems has become quite technical, and our organization does not now have available to it the expertise to offer a definitive judgement as to the relative merits of these systems. Further, as a group that principally concerns itself with VA policy objectives, we are reluctant to comment specifically on such day-to-day operations at this stage in development.

Our organization applauds your decision to hold this hearing, and we will monitor it with interest. We hope that a public presentation of the facts will provide sufficient information to resolve this matter, to accommodate full computerization of vital VA health care functions in a way that will assure high quality care to veterans at a reasonable cost.

As always, Mr. Chairman, your leadership on behalf of the nation's veterans is appreciated.

Sincerely,

Philip Riggin

E. Philip Riggin, Director
National Legislative Commission

WRITTEN COMMITTEE QUESTIONS AND THEIR RESPONSE

Office of the
Administrator
of Veterans Affairs

Washington DC 20420

JUN 2 3 1987

Veterans
Administration

JUN 24 1987

Honorable G. V. (Sonny) Montgomery
Chairman, Committee on Veterans'
Affairs
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed please find the Agency's responses to the questions which you forwarded on behalf of Congressmen Gerald B. Solomon and Michael Bilirakis for the April 8, 1987, hearing by the Subcommittee on Hospitals and Health Care. Thank you for the opportunity to provide this additional information for the record.

Sincerely,

THOMAS K. TURNAGE
Administrator

Enclosure

HON. GERALD B.H. SOLOMOM TO VETERANS' ADMINISTRATION

QUESTIONS SUBMITTED BY THE HONORABLE GERALD B. SOLOMON FOR THE HEARING BEFORE THE SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE REGARDING THE DEPARTMENT OF MEDICINE AND SURGERY COMPUTER SYSTEM ACTIVITY

TO THE VETERANS ADMINISTRATION

Question: 1. In what ways have computers in general, and DHCP in particular, improved/enhanced the provision of health care?

Answer: Health care both within the government and in the private sector has experienced significant changes in the last five years. Health care delivery is a dynamic and changing process, requiring the local health care provider to respond quickly to both individual patient needs and increased management challenges. These changes are seen not only in the use of increased technology in the direct delivery of patient care, but also in the rapid implementation of productivity measures such as DRG's and case/mix models. It is no longer acceptable clinical practice to wait hours for a laboratory result to be hand delivered to a ward or outpatient care unit, when this same result can be available within minutes using automation.

Neither VA providers nor our private sector counterparts would be able to meet these changing needs of medical care, without significant automation support which allows medical staff to determine all medications a patient is receiving, transmit laboratory results to wards and clinics without extended delays, and track patient admissions. Within the VA system there is a great demand to expand upon those functions DHCP currently provides. One of the biggest demands is for more computer equipment at medical centers so that radiology results can become as readily available as other test results; so that charts can be tracked and be made consistently available when the patient is seen; so that time spent on preparing necessary reports can be reduced. The implementation of the DHCP applications which will provide this kind of operational support will also have an even more important impact. It will give providers more time to take care of the veteran patient.

Question: 2a. How is the use of computers cost effective?

Answer: Computers provide medical staff with the needed information as soon as possible, thus avoiding ineffective treatments and duplicate orders and increasing the likelihood that the patient will be out of the facility sooner. The establishment of the DHCP patient data base allows providers at the local level to compare cost, workload, and utilization data and use these data to correct inefficient procedures as well as find more economical, quality methods of providing care. The use of computers has also reduced the number of time consuming manual tasks performed by the admitting and scheduling staff, and the outpatient pharmacy staff.

Question: 2b. Comment on the cost effectiveness of DHCP versus IHS.

Answer: Cost benefit studies of both DHCP and IHS have been conducted to evaluate expenditures to date as well as future costs that can reasonably be anticipated based on this experience. The study of DHCP CORE by Price Waterhouse cost justified the approach taken by VA and went on to identify specific areas of savings as well as other benefits that have accrued from implementation of DHCP. Using commonly accepted accounting practice, Booz-Allen and Hamilton did a comparative evaluation of DHCP and IHS. They compared cost effectiveness over a ten year expected life cycle. Scenarios explaining how the requirements would be met during that time period were developed, broken into resource components, and cost. They found that IHS cost twice as much as DHCP for comparable functionality.

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Question: 3. What are the advantages/disadvantages to developing an in-house computer system, i.e., DHCP as opposed to contracting out?

Answer: In-house System Development - DHCP

- User involvement in system development and their consequent commitment to it which would otherwise be lacking.
- Software can be rewritten quickly to meet new requirements because MUMPs requires fewer lines of code to perform the same job as other computer languages and VA Filemanager can be used by non-programmers to create new reports from the existing database.
- Lower systems life cycle costs for equivelant benefits as documented in evaluations by Price Waterhouse and Booz-Allen and Hamilton.
- All patient information is entered into the same data base saving individual departments the job of entering basic information several times. Both inpatients and outpatients are in the same base.
- Development based on an in-depth understanding of VA needs.
- Greater VA control over the end product.
- No dependence on a single brand of hardware so that as technological improvements are made in machines and their price drops, VA can replace old equipment for a lower cost, and the DHCP software can be switched over without rewriting it.

Commercial System Development - (IHS)

- The requirement to use a single hardware-software system over a system life cycle extending 10 years into the future limits flexibility and increases dependency on a for-profit firm to respond to new legal or clinical requirements.
- Less timely when changes are necessary because of the steps required in a contractual process when a change in the contractor's scope of work is necessary.
- High cost of making changes to the standard vendor software.
- No opportunity to buy computer equipment competitively because a commercial software package usually runs only on one brand of equipment.
- Little familiarity with or understanding of VA needs/requirements with strong incentive to develop software which can be marketed to private hospitals which are the vast majority of vendors' business and to convince VA that this commercially slanted software will suffice.
- Market surveys indicate that vendor claims of integration have not lived up to expectations.

Question: 4. What are the Federal Information Processing Standards (FIPS), and why do they exist? Please provide for the record the standards applicable to systems such as IHS and DHCP. Does DHCP comply; does IHS comply?

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Answer: The FIPS publications of the National Bureau of Standards are guidelines provided to the Federal sector to assist in the specification, development, procurement and management of information systems. They address a broad range of technical and non technical issues in an attempt to equip management to deal with ADP issues.

Because of time lags in updating the guidelines, they do not always address state-of-the-art "data IRM processing" concepts such as design by prototype. In these instances the guidelines are less applicable and require interpretation and adaptation by program officials. The FIPS publications have been used by DM&S management as guidelines for establishing the current DHCP documentation standards. Where applicable, DHCP management has used the FIPS publications as a foundation and expanded upon them as appropriate to address its innovative approaches to development. The FIPS publications utilized were:

FIPS Publication 38 -- Guidelines for Documentation of Computer Programs and Automated Data Systems

FIPS Publication 64 -- Guidelines for Documentation of Computer Program and Automated Data Systems for the Initiation Phase

FIPS Publication 105 -- Guideline for Software Documentation Management

We understand that there are changes underway within the Standards making Committees to update the FIPS for consistency with emerging ADP concepts and technologies (such as prototyping).

The IHS program is a test. The Federal Information Resources Management Regulation (FIRMR) exempts contractors participating in a test/evaluation from compliance with FIPS. Were IHS to become the vehicle for automating all VAMCs, the contractors would be required to comply with applicable standards.

Question: 5. Are there any differences in the staffing levels of the IHS sites as compared to similar sized facilities running DHCP?

Answer: IHS staffing levels are considerably higher than those for DHCP due to the fact that the IHS systems require 24 hour, 7-day a week on-site attendance. DHCP systems, while operating the same number of hours, do not require the same level of site support. The IHS contracts also provide for on-site software customization, management support and applications training. Staffing for DHCP sites was developed based upon our experiences with DHCP CORE and includes projections for support of the top 8 priority enhanced DHCP modules in addition to CORE. Contractor and average VA staffing (performing DHCP related duties only) for the three IHS sites and comparably sized DHCP sites are as follows:

	IHS SITES	COMPARABLE DHCP SITES
Philadephia VAMC	18 Vendor 2 VAMC	6
Saginaw VAMC	8 Vendor 2 VAMC	5
Big Spring VAMC	7 Vendor 1 VAMC	4

Question: 6. Are local hospital managers able to develop programs to meet their own needs with DHCP? With IHS?

Answer: Under DHCP local hospital managers can meet local needs that are unique to the facility and analyze data for management purposes and they can do so without affecting the integrity or functioning of the patient data base and nationally released software.

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Given "read-only" access to the DHCP data base on a need to know basis by the VAMC Security officer, local managers can use the user friendly VA File Manager data base utility to develop a variety of reports to assist them in monitoring the quality and efficiency of health care delivery. The File Manager and common data base provide "one stop shopping" in that the data are together in one place for access by a single set of utilities that are easy for managers to learn to use. Data can also be extracted for further manipulation in a separate operating environment, such as a PC.

By the same token, there is flexibility to use data from DHCP for separate applications to meet specific requirement of the station. For example, the Denver VAMC has developed a separate application that has helped them compensate for cutbacks in funding for beneficiary travel. Several days ahead of scheduled clinic appointments, the appointment list of patient names and addresses is printed in zip code sequence. Veterans' organizations then follow up and arrange ride sharing for patients. This is one example from many that can be cited.

With IHS, such system flexibility is not inherent in any of the vendor software currently provided. Any change or addition must be negotiated through traditional contract channels. We are still negotiating with Electronic Data Systems to alter their software to provide nationally mandated Means Test data when the DHCP program incorporated necessary changes, tested, distributed and installed them by October 1, 1986.

Question: 7. Has the VA had problems with having commercial software tailored to meet VA specifications?

Answer: All three IHS sites have had significant problems. The VA has experienced considerable problems with the IHS contractor at the Big Spring VAMC in tailoring the off-the-shelf software to meet the VA's needs. A request to modify the software to include the Congressionally mandated Means Test data still has not been complied with. The vendor servicing the VA in Philadelphia has had a great deal of trouble modifying the pharmacy package to meet our needs, and all three IHS sites have experienced problems in communicating with the central systems.

Question: 8. What features of DHCP make it amenable to VA use? Why?

Answer:

- It is easily adaptable/responsive to changing requirements, e.g., Means Test, eligibility changes, etc.
- Software is generic and transportable to all sites.
- DHCP constitutes a foundation that can easily be added to and expanded as necessary.
- It is user friendly.
- Its integrated approach to database management and the VA File Manager facilitate extraction of data and reports generation from the existing database by the non-programmer thereby conserving the use of skilled programming staff.
- Its enhanced ability for local tailoring is tempered with sufficient controls so that certain parameters cannot be changed at will.
- Technical/maintenance staff is in-house and on-site.
- It is directed to VA clinicians' priority needs because it was developed with their input.

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Question: 9. What inter-facility communication and data access will DHCP have?

Answer: There are several levels available DHCP users: communications terminal access to information, message exchange and HINQ eligibility inquiry.

Terminal Access: A typical DHCP user with the proper security authority can access data at a remote facility. The user can select a dial out modem pool on the VADATS packet switch data network (PSDN) as a menu selection on the DHCP MICOM electronic terminal switch. When connecting to the remote facility, and gaining access through the security system, the user will encounter the same user friendly programs they are accustomed to working with daily at their facility. The user will then be able to review any data they had authorization to access. This capability exists with currently installed equipment and software.

Message Exchange: Interfacility electronic mail or message exchange became a reality with the release of Network Mailman. This is an extension of the local facility level electronic mail system which has been available since the first release of DHCP. With a simple addition of a domain identification, messages can be sent to individuals or groups at remote facilities. Presently, the emphasis of the nationally released software is to support the transfer of typed text but this same system is being used for testing the transfer of programs and data as well. Electronic transfer of programs is becoming commonplace within the DHCP programming community. This will be expanded to incorporate patient data interchange.

HINQ Eligibility Inquiry: Any DHCP user with the proper security clearance may initiate an inquiry from the DHCP computer through VADATS to the Department of Veterans Benefits centralized eligibility system. These inquiries can be initiated directly, or they can be queued for later submission.

Question: 10. DHCP has been criticized for not providing some of the features offered by commercially available systems. Please comment on this.

Answer: DHCP delivers the functionality specified and required by our medical center end users. Because we view automation as a tool in the delivery of health care and because we wished to put this tool in the hands of our providers as soon as possible, we took some short cuts.

Certain refinements commonly offered by commercial vendors (such as more sophisticated terminal outputs) were judged to be not required or too expensive; elaborate management and planning mechanisms were not in place before computers were installed. For this the Agency has been criticized, and we accept these criticisms. Nevertheless, DM&S has recently taken positive action to meet the concerns that have been expressed regarding DHCP by various oversight agencies during their evaluation of this massive nationwide implementation effort. The automation support provided by DHCP has given hard pressed and dedicated staff the tools to make their jobs easier and improve the quality of care we deliver to the veterans we serve. Furthermore, we are doing all we can to address the areas where improvements are indicated.

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Question: 11. You seem to consider user satisfaction to be as or more important than other factors in deciding whether to continue with DHCP or shift to IHS. Others do not make this argument. Why do you consider user satisfaction important?

Answer: Both user acceptance and cost are key factors. The Booz-Allen Study comparing DHCP and IHS found DHCP more acceptable to VA end users at only half the cost. DM&S did not buy computers for their own sake; we bought them as an aid in delivering health care. DHCP software written to meet the requirements of VA clinicians and administrative staff has proven to be more suited to the VA than software which commercial vendors have written to be marketed eventually to a wide range of customers, of which the VA is only one. We feel strongly that one of the most fundamental measurements of a system's effectiveness is expressed by the degree of user acceptance and satisfaction that it attains. A system will never achieve its maximum benefits and be utilized to its fullest capabilities unless the users are enthusiastic about it. User acceptance ensures that users take advantage of all the capabilities a system can offer because they take a personal interest in making the system work. This in turn leads to innovative suggestions both for achieving efficiencies and for building on system capabilities and data to deliver better service to patients. As an example, Dr. Ross Fletcher, Chief of the Cardiology Section, Washington VAMC recently testified that practitioners in cardiology were able to use the DHCP system in an ad hoc manner to improve the care of high cholesterol patients. When a new drug which reduces cholesterol became available, physicians using the system could produce the names of patients whose cholesterol levels were excessive within 15 minutes. Most of the patients were notified and counseled or given drug therapy.

User acceptance means that hospital staff have a sense of satisfaction and accomplishment in performing their duties that would not be achieved if they looked upon the system as something they had to use rather than something they wanted to use. Ultimately what this means is that users achieve a higher degree of productivity and that the government receives the maximum return on its investment.

Question: 12. Can you give examples of user acceptance of DHCP?

Answer: By far the most compelling of DHCP's significant benefits is the widespread user acceptance it enjoys. Ease of use, flexibility, ability to support local initiatives and software that meets the exact requirements of its users are among the many benefits cited by DHCP users. In the course of conducting their recent studies, Price Waterhouse, Booz-Allen and GAO visited several VAMCs. Both firms and GAO conducted extensive interviews at the hospitals and also observed how DHCP was actually used. Despite the different perspectives of the studies, all documented that the level of user acceptance and satisfaction with the program was uniformly high.

Staff found the system easy to use, responsive, and a significant improvement over the manual system. For example, Price Waterhouse found that in the Outpatient Pharmacy areas, patient data are more readily available, medication profiles are reviewed more often, clerical tasks are reduced, and staff report that their jobs are more satisfying. Booz-Allen asked users to comment on system functionality, technical adequacy, integration, and performance. They found that DHCP users universally expressed satisfaction with the extent of capabilities their package (e.g. Radiology, Dietetics) will provide when finally installed in their hospital because of the role they played in designing the package. GAO found that users felt the response time was fast; the training was adequate; DHCP was relatively easy to use; the data in the system were perceived as adequate; and the system helped them perform their jobs.

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A common complaint of field staff mentioned in those studies and noted by VACO officials in their trips to VAMCs is that there is not enough equipment. This is another sign of user acceptance; they want more equipment so that more staff in the hospital can get access to the data and so that more applications can be added to the system.

Question: 13. How has the DHCP software been developed to assure high user acceptance?

Answer: Specifications for software are developed by Special Interest User Groups (SIUGs), which are made up of VAMC staff from the particular area being developed, such as pharmacy or laboratory. The SIUGs then work closely with the programmers to assure that the software actually meets their needs. In many instances, the programming itself was started by a program area staff person. Although the SIUG is only made up of one representative from each region, all VAMCs have input to the process. Fine tuning takes place during the alpha and beta tests and continues after the package has been released.

Question: 14. Exactly how much does VA already have invested in DHCP and at how many facilities? How many computers, terminals, etc., are there in DHCP now?

Answer: The total hardware investment in DHCP is currently $84.5 million at 164 individual sites (supporting a total of 169 medical centers, 1 domiciliary, 7 independent outpatient clinics and 48 satellite outpatient clinics). The hardware composition is 480 computers, 18,900 CRTs and 9,294 printers. In addition, the program has a significant human resource investment in thousands of trained users, skilled development staff, and committed hospital management.

Question: 15. If a decision is made to use IHS, how much will it cost to scrap the part of the existing DHCP that would no longer be used? How much of DHCP would have to be discarded, and what part could still be retained?

Answer: If a decision is made to totally convert to a commercially available proprietary integrated hospital system (IHS), there is no assurance that existing DHCP computer hardware could be compatible with the IHS vendor's software/hardware. This suggests the strong possibility that all the DHCP computers would have to be discarded. Equally important is the vast infrastructure DHCP has built up of experienced ADP managers and technicians and trained end users. Retraining to support and use a vendor's product would be costly in terms of dollars, morale, and lost productivity.

Question: 16. Please inform the Committee in detail what initiatives has VA taken to address the areas of DHCP needing improvement according to Booz-Allen and Hamilton such as management support, support services and emphasis on information system engineering and design.

Answer: The DM&S Medical Information Resources Management Office (MIRMO) has been reorganized to provide greater strength in program oversight on a national level. In February 1987, the Information Systems Centers (ISC) were brought under the Medical Information Resources Management Office. In April, MIRMO was raised to a higher level in the DM&S organization. The realignment of the ISCs under the line authority of MIRMO will serve to strengthen the project management and accountability on issues of national priority, while retaining in the regions and the medical centers the necessary degree of control over matters more appropriately addressed at these levels.

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Along with the reorganization of MIRMO, a Program Management Review Group (PMRG) was formed to provide ongoing field input. The purpose of the PMRG is to evaluate the DHCP activities; propose Service objectives for FY 1987 and beyond; and evaluate the current organization and suggest modifications to improve efficiency. The PMRG is comprised of two representatives from each region (one from the ISC and one representing the medical center site management). Representatives include large and small medical center site management, hardware technical experts, DHCP Core software development staff, an ISC director and associate director, ISC user support staff and individuals with technical background in clinical services and personnel.

The PMRG has reviewed both external and internal studies about DHCP and determined opportunities for improvement. In addition, the PMRG was asked to survey medical center site managers and provide any additional DHCP issues. Issue categories have been identified and are the subject of continuous review. Recommendations for action have been made and action/assignment follow-up lists are being developed to both manage and track the resolutions to conclusion.

A system to track the installation of both hardware and software has been implemented. All VAMCs report status quarterly to the Washington ISC which produced the first national report in April 1987. Work has also begun on a DHCP project tracking system for MIRMO and ISC oversight and management of DM&S information resources. A contractor is preparing specifications for a tracking system which will include, but not be limited to, tracking national software development, and program management issues. Progress in a given task relative to established milestones will be monitored.

With respect to information systems engineering and design it should be noted that the following can be said of DHCP:

- DHCP integration starts at the file design level.
- DHCP enforces programming and verification standards which dictate the policy of integration (e.g., no package would pass verification which created its own files when existing files would serve).
- DHCP uses the concept of Design Review to evaluate packages early in development for consistency with integration goals (e.g., Oncology was directed to redesign/rework due to creation of files/structures which should have referenced existing files).
- DHCP uses a consistent sign-on and menu presentation which gives the user a consistent view of the system.
- DHCP uses a standard set of shared/integrated files (e.g., Patient, Drug, User, etc.).
- DHCP offers the capability to construct meaningful menus for users which match the functionality/abilities of that user.
- DHCP offers the capability to quickly navigate among menu choices.
- MUMPS has proven a viable and highly effective programming language in a wide variety of applications, and is particularly well suited for the VA's medical applications.
- The VA File Manager provides state-of-the-art relational capabilities for joining and extracting date from various files.

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- o MUMPS has inherent capabilities that make it faster in many circumstances, especially for data base access.
- o MUMPS is more efficient than other languages in the area of disk management. MUMPS uses B-trees which are scientifically proven to reduce the number of disk accesses needed to access desired data, thus MUMPS is very efficient in retrieving data from the disk.
- o MUMPS is very efficient in disk storage. MUMPS only allocates space for existing data. This is in contrast to other languages which reserve blocks of space on disks for potential data. Medical data is highly variable in its scope and quantity, therefore utilizing languages which reserve blocks would necessitate greater disk capacity to store data for medical applications.

Question: 17. Where else is the MUMPS language used, including other government agencies and across the world?

Answer: In the US Government there are major systems based on MUMPS, some of which use DHCP technology. These include:

U.S. Navy	Occupational Health System
Indian Health Service	Outpatient Clinics
Department of Defense (TRIMIS)	ACCESS-patient registration and quality assurance

The Indian Health Service has successfully used DHCP software to automate 62 of its medical care facilities which serve over 800,000 American Indians and Alaskan Natives. DHCP software was also successfully implemented at March AFB as a test in the DoD hospital system. A second DoD test site at Fitzsimmons Army Medical Center is being installed. In addition, two local agreements exist: one between Elmendorf AFB and the VA's Anchorage OPC and the other between Elgin AFB and the Tampa VAMC. At Elmendorf, the clinic scheduling software was modified to run on DoD equipment.

In the private sector MUMPS is used to support health care in hospitals and clinics. These systems are used in small facilities and in chains of hospitals. In the general commercial sector, MUMPS is used in banks, insurance companies, financial institutions, telemarketing, and inventory management applications. All of these commercial uses are in large corporation settings.

The MUMPS language is widely dispersed throughout the world. There are MUMPS Users Groups organizations that are affiliated with the MUMPS Users Group USA in Great Britian, Europe, Japan, South America and Australia. These groups represent commitments to MUMPS by foreign governments, private commercial and health care organizations.

For example, the 2700 bed Helsinki University Central Hospital in Helsinki, Finland has used the MUMPS language and DHCP software since before DHCP was officially in use in the VA. Two states in West Germany are adopting this language for official government ADP affairs. The Shell International Co. is a major user of MUMPS in its European operations.

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Question: 18. Comment on the transportability of DHCP regarding its use by the Indian Health Service and the pilot at DoD military hospitals.

Answer: As part of a congressionally mandated study, the VA DHCP software has been installed at the March Air Force Base and the Fitzsimmons Army Hospital. It was possible to install the CORE VA software with only minimal modifications for patient demographic information and DoD mandated workload statistics. The successful implementation of the VA software at the DoD sites has demonstrated the feasibility of transporting DHCP software to other government settings. Several other military facilities are using VA software under local sharing agreements.

The Indian Health service has adopted the Kernel, VA Fileman and VA applications for use at their treatment facilities. In addition, the Indian Health Service has an extensive development program of its own which is working on modifications and enhancements of the VA applications. The VA and the Indian Health Service have developed a cooperative working arrangement under which each agency will benefit from the development work done by the other.

Question: 19. Is the Office of General Counsel using or planning to use DHCP in medical malpractice claims or elsewhere, and how?

Answer: The Office of the General Counsel currently has in place a claims tracking package based on the DHCP model for use by the District Counsel Offices. The package was developed with the VA Filemanager and is implemented with the DHCP Kernel. The basic functionality of the package is to track all types of claims, including malpractice claims, and to produce debt collection letters. Currently the package is implemented on a stand alone basis, that is it is not integrated with other DM&S DHCP applications.

The Office of the General Counsel has a strategic plan to expand its tracking system which includes plans for full integration with the DM&S DHCP packages to take advantage of improved information sharing. One of the planned first steps may be electronic passing of patient data from the hospital based accounts modules to the District Counsel claims tracking package.

Question: 20. Have other hospitals tried to adapt the VA software to meet their needs? If so, has it been successful?

Answer: In addition to the use of the VA software by the Indian Health Service and Military hospitals there is evidence that the software is in wide use by other hospitals in this country and abroad. While we have learned about the software being implemented at several non-government hospitals in the U.S. we do not have any specific information as to the success of the implementation. In Finland, the Kernel has been adopted by a group of hospitals, including the 2700 bed Helsinki University Central Hospital. The Kernel is being used to develop Finish-specific applications.

Question: 21. Initially there was some difficulty in hiring experienced MUMPS programmers for DHCP. Has this obstacle been overcome?

Answer: There has been much discussion of the ability of DM&S to retain and recruit ADP personnel, especially those trained in the MUMPS language. Granted some senior staff have left the Agency, primarily to work on the DoD/TRIMIS version of DHCP. In 1982, when the Department embarked upon the DHCP program, it was estimated that there were fewer than 50 qualified MUMPS programmers in the VA. Currently there are over 300 MUMPS programmers.

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During the last three years, DM&S has established a trained user base of administrative and clinical staff at great cost and effort to the individual facilities. These health care providers who have spent innumerable hours making sure that DHCP met their needs, and assisting in the implementation of modules at their facilities. This base should be built upon, not dismantled. An interruption in use or expansion of DHCP would have a very negative impact upon management effectiveness and morale at the health care facilities.

Retention rates of programmers are similar to those experienced in the private sector, where significant turnover of trained ADP staff occurs. The VA is, however, experiencing satisfactory recruitment at the beginning programmer level, and is retaining these young programmers for several years. An in-residence training program which will recruit 10 Information Resource Management trainees each year has recently been inaugurated and is expected to have a positive influence on our future site management needs. There is also our hidden asset of full-time health care providers, who on their own time have learned the use of the DHCP File Manager and are using these tools to augment their personal effectiveness in providing health care.

Question: 22. What is being done to improve the testing and documentation of DHCP software?

Answer: Since 1983, our number one priority has been to establish a baseline of CORE software at the medical centers as quickly as possible to help the facilities keep pace with the expanding workload. While this has been accomplished, it has been at the expense of documentation and quality control. Recognizing those problems, vast improvements have been made in the last 12 months. No new package is being released without a full complement of user and technical documentation. User and technical documentation for Initial/Full CORE products will be complete and up-to-date by the end of the calendar year. Documentation standards are being put in place and responsibility for assuring conformance to those standards is being centralized at one location. Software quality control has also expanded. In addition to two FTEE dedicated to documentation, MIRMO has also placed 3 FTEE at each ISC to establish quality control/verification staffs. Each package is now required to proceed through both an internal and external verification prior to distribution to the medical centers. The alpha/beta testing process has also been expanded to assure that the modules are tested in a wide variety of medical centers including the smaller hospitals. On a regional basis, the ISCs typically distribute a new release to selected test sites prior to general distribution to provide a further level of quality control. The result has been much higher quality packages arriving at the medical centers.

Question: 23. Is DHCP flexible enough to quickly incorporate Congressionally mandated changes?

Answer: Yes. A recent test of this was the law requiring a means test for VA hospital care which was passed April 1986. Specifications for changes to the Admission/Discharge/Transfer and Scheduling modules were developed. The revised software was alpha tested in July and verified in August, ready for implementation at the beginning of the new fiscal year in October 1986. DM&S has been able to adjust to priorities and realign resources as required to meet tight deadlines without the "red tape" associated with making changes under vendor software contracts. In contrast, the commercial vendor servicing the Big Spring VAMC as part of the IHS test, still has not responded to our requests for means test software.

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Question: 24. Please describe in detail the integrated hospital system (IHS) tests.

Answer: IHS is a Congressionally mandated project to test the applicability of commercially available Hospital Information Systems for the VA hospital environment. Prototype IHS systems are operating with varying degrees of success at three separate VAMCs. Consistently, however, the three vendor products have had to be modified extensively to meet VAMC requirements and have yet to provide required links with the VA's vital centralized management systems. The recently completed Booz-Allen Comparison study of DHCP versus IHS found that DHCP at half the cost was more acceptable to VAMC end users and provided capability more consistent with the VA's operational requirements.

The House and Senate Appropriations conferees earmarked funds in the FY 84 VA Appropriations Act to carry out IHS. The three VAMCs selected to participate in the IHS project were Philadelphia, PA; Saginaw, MI; and Big Spring, TX. All sites were required to automate hospital functions in the areas of patient registration, admission, discharge and transfer, lab, order entry, clinic scheduling, pharmacy, medical records tracking, radiology, nursing, dietetics, materials management and resource allocation cost/accounting. The duration of the IHS test was initially set at two years and nine months (September 1984 - May, 1987), and has since been extended to 3 full years with the cumulative costs totalling approximately $23.6 million.

On February 1, 1984, an additional Request for Proposal was released in order to obtain an independent contractor to evaluate and monitor the three IHS demonstration sites. This contract was awarded to Arthur Andersen and Co. on June 7, 1984. The cost of the contract was $2.9 million over the entire IHS test period (FY 84 - 87). Due to delays in the installation of mandatory modules at all three sites, the contract was modified to permit continued monitoring of system implementation through November 1986, postponement of deliverables approximately 90 days, and a formal extension from July through September 1987.

Experience at the IHS medical centers indicates that the vendors have had difficulty tailoring base product software to meet individual VAMC requirements. Hundreds of changes were required to make the software conform to VA's procedures and many have yet to be accomplished. In addition, the vendors encountered delays in responding to requests for software modifications necessitated by Congressional and/or Agency policy initiatives i.e. means test software, 3rd party billing, Outpatient Clinic reporting. Furthermore, due to incompatible procedures, none of the commercial vendors have been able to provide automated interfaces with VA central systems such as CALM, PAID, LOG, PTF, etc.

The IHS test also revealed that in order to adapt a commercial system to the VA environment, a major commitment of the contractor's staff was required. The number of FTEE's assigned to the IHS medical centers for the purpose of operating and supporting the computer systems has been in excess of comparable DHCP sites.

VAMC Philadelphia: The vendor at Philadelphia VAMC is Shared Medical Systems and the equipment they have installed is a combination of IBM and DEC which operate using COBOL as well as MUMPS. The cost of this installation is approximately 4.5 million dollars annually or just under 14 million dollars for the three year test period. The applications that have been successfully installed are Patient Registration, ADT, LAB, Order Entry, Clinic Scheduling, Medical Records Tracking, Dietetics, and Radiology.

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The applications that have not been installed are Pharmacy, Nursing, Resource Allocation/Cost Accounting, and Materials Management. The reason that these modules have not been provided can be attributed to the vendor's inability to customize their software to meet VA user requirements. A case in point is the Pharmacy module in which the vendor attempted to install a system other than the one that had been bid and ended up relying on the VAMC as a beta test site for this under-developed application. Consequently, the module is over 12 months late and has delayed indefinitely acceptance testing on the entire system.

VAMC Saginaw: The vendor at Saginaw is McDonnell Douglas Automation and they utilize a combination of Tandem, IBM and DEC machines all of which operate using COBOL. The cost of this installation is 1.2 million dollars annually for the three year test period. The applications that have been successfully implemented are Patient Registration, ADT, Clinic Scheduling, Medical Records Tracking, Order Entry, Laboratory, Pharmacy, Nursing, Dietetics, and Materials Management. The only application that has not been installed is Resource Allocation/Cost Accounting. Acceptance testing for mandatory modules occurred on May 1, 1986 and 30 days later these modules were approved for use in the medical center.

However, acceptance testing for optional modules which was to have occurred in November, 1986 was postponed until March, 1987 and to date has still not taken place. The reason for this delay is due to the decision to concentrate on the mandatory modules.

VAMC Big Spring: The vendor at Big Spring is Electronic Data Systems and they are utilizing Data General equipment which operates on COBOL. The cost of the installation is 1.7 million dollars annually for the three year test period. The applications that have been successfully installed are Patient Registration, ADT, Clinic Scheduling, Lab, Medical Records Tracking, Pharmacy, Order Entry, Nursing. The only applications that have not been installed are Resource Allocation/Cost Accounting, and Materials Management. However, many of the mandatory modules are missing important features which the vendor has been unwilling or unable to develop. The VAMC indicates that the Registration and ADT modules will require a great deal of tailoring to meet VA requirements. In point of fact, the vendor has failed to provide the site with the software needed to process Means Test data, 3rd party billing, and Outpatient Clinic reporting. Although acceptance testing is scheduled to be completed in June, it is doubtful that the system, as currently installed, will meet the VAMC's automation needs.

The IHS prototype demonstration will be completed in September, 1987 at which time Arthur Andersen & Co. will submit a final report. In addition, a contract was awarded to Booz-Allen and Hamilton for a study comparing and assessing the costs and benefits of IHS and DHCP. Preliminary (Phase 1) results were submitted in February, 1987.

Question: 25. How were the three vendors and hospitals for the IHS test matched up?

Answer: The "matching" of vendors to three previously designated VAMCs occurred as a result of a competitive procurement. The IHS contracts were competitive procurements in which numerous vendors submitted bids in response to an RFP. These vendors were instructed to address the information requirements in one or more of the three VA medical centers that had been selected to participate in the IHS project. Three VA facilities, representative of small, medium and large medical centers, were

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selected (as a result of a system-wide request for volunteers) as IHS test sites. The selected VAMCs were Big Spring (small), Saginaw (medium) and Philadelphia (large). Contracts were awarded to three vendors (Electronic Data Systems - VAMC Big Springs, McDonnell Douglas Corporation - VAMC Saginaw and Shared Medical Systems - VAMC Philadelphia) on the basis of their responsiveness to the RFP.

Question: 26. How much are each of the three pilot programs costing?

Answer: The IHS test of commercial software at Big Spring, Saginaw, and Philadelphia VAMCs is costing the Veterans Administration $23.6 million. The duration of the test was intended to be two years and nine months. The breakdown across the three sites is $13.9 million for Philadelphia, $5.8 million for Big Spring, and $3.9 million for Saginaw. Other costs associated with these systems include $400,000 for acquisition of PDP 11/84's to access veteran's eligibility data from the Department of Veterans Benefits Systems (i.e. the DHCP Hospital Inquiry Command), $100,000 for software modifications to the system at Big Spring VAMC which were outside the scope of the vendors contract, and $50,000 for expansion to an outpatient clinic linked to the Saginaw VAMC computer system.

In addition, an evaluation contract was awarded to Arthur Andersen & Co. for 2.9 million dollars over the same period of time as the IHS contracts.

Extension of the test period will incur additional costs, roughly $8 million per year for continued operation at 3 sites and continuation of the Arthur Andersen contract.

Question: 27. Comment on the IHS test in relation to DHCP.

Answer: The experiences of the 3 test sites vary but users have generally been satisfied with the support provided by these systems in what is essentially a positive reaction to the introduction of ADP where little capability existed before. However, each system required substantial modification before it could be used. One software vendor of the three has yet to address a significant number of problems with the base modules. Communication with central systems has proven to be universally a problem. Since centralized reporting is a big component of the VA's centrally managed programs and often is subject to change, we would expect these communications problems to get worse with IHS over time. The VA is in the process of procuring a small DHCP system for these sites so that they can interact with central systems such as the HINQ hospital inquiry application, which is the DHCP interface with our Department of Veterans Benefit computer systems.

The cost of these commercial systems has also been significantly greater than those of DHCP.

Question: 28. In your statement you said it would take seven years to replace DHCP. How was that number arrived at?

Answer: This was the number of years Booz-Allen and Hamilton determined it would take to replace DHCP with a commercial system in each of the VA medical facilities -- two years to develop specifications and award a contract and five years to implement the system. This seems a rather optimistic time frame. Only the top two MIS software suppliers have installed systems into a greater number of hospitals than the VA medical care system, and McDonnell Douglas has only installed a total of 135 systems in the past ten years.

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Even if only 20% of the VAMCs were installed each year that still amounts to at least 33 hospitals per year. A recent article by Sheldon Dorenfest, a leading HIS market specialist, in Modern Healthcare, indicated that McDonnell Douglas only installed 7 systems in 1984 and 9 in 1985. For them to begin installing systems in the VA will require at least four times the staff they now have on hand, which necessitates recruiting and training a great number of people. Even HBO, the largest supplier of hospital information systems, only installed 25 systems in 1985.

Question: 29. During the IHS test have the commercial vendors been responsive to making necessary changes in a timely fashion?

Answer: The IHS systems have had mixed results in addressing VAMC software changes. All three vendors had to undertake literally hundreds of software modifications to tailor their base product software to meet individual VAMC requirements. Electronic Data Systems the vendor at Big Spring has yet to complete 30 software changes on the Pharmacy, ADT, and Dietetics modules. Furthermore, for over one year the vendor has been unable to provide the VAMC with the software needed to implement Congressionally mandated means testing, 3rd party billing, and Agency required reporting of 100% outpatient visits.

Shared Medical Systems the vendor at Philadelphia VAMC has had some successes i.e., means test software, 3rd party billing, VA length of stay for DRG grouper, etc. However, they have also experienced a number of setbacks, most notably the development of a Pharmacy module. The vendor's base Pharmacy module was inadequate to satisfy the medical center staff and so the decision was made to replace it with a new module. Completion of the module was delayed for over one year. Currently, only the inpatient portion of the module is operational at the medical center with the outpatient package projected for June, 1987.

Of the three, the vendor who has been most responsive to their IHS users is McDonnell Douglas. They have addressed virtually every site generated request for software changes and done so at no additional charge. They were able to provide new means test software and 3rd party billing in 30 days time. The vendor is currently working on an automated interface with the Agency's CALM system.

It should be noted that the IHS tests involve a single site and there is potentially a lot riding on them for the individual vendors involved. Vendor responsiveness could be quite different if one of these vendors were selected for nationwide implementation. There would be no further competition and no practical resource for the VA should a vendor refuse to make a change or charge an exorbitant fee for it.

Question: 30. McDonnell Douglas in its testimony referred to a 24 hour operating requirement which VA imposed on its IHS pilot project at Saginaw Medical Center. Do any DHCP facilities have 24 hour operations, and what are the operating requirements at Saginaw compared to those with facilites using DHCP? Does the 24 hour IHS operating requirement provide a fair basis for comparison to DHCP systems in use in other VA medical facilities?

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Answer: All medical facilities have a 24 hour a day and seven days a week operating requirement. The medical treatment of veterans at even the smaller VAMC goes on 24 hours a day seven days a week. The de facto standard for DHCP has been 24-hour operations of systems, but unattended (i.e., without staff present) daily back-up of computer data bases and unattended operations on evenings and weekends. The majority of our small facilities follow this standard. The majority of our very large facilities have 24-hour staff coverage, primarily to support the high activity levels of these facilities. (The only exceptions are the independent OPCs which only function during the day.) The 24-hour operating requirements at Saginaw are identical to those expected from any DHCP facility. McDonnell Douglas chose to provide 24-hour attended operations at Saginaw.

Since ADP support needs to be provided 24 hours a day, seven days a week, it seems only fair that the IHS as well as the DHCP sites should be operational 24 hours a day.

Hon. Michael Bilirakis to Veterans' Administration

CONGRESSMAN BILIRAKIS

Question: 1. You state that DM&S has installed state-of-the-art integrated systems in 223 health care facilities since March, 1984. But I have been told that DHCP is not an integrated system. Would you please tell me how you define integrated and why you consider DHCP an integrated system.

Answer: It is true that the VA's DHCP Information System is a fully integrated system. As a matter of fact, it is rather unique in the industry that this level of integration exists in such a comprehensive system. What is commonly misunderstood is the concept of an actual integrated system, as opposed to one which superficially looks like an integrated system.

A fully integrated system is one which uses common file structures, common file data, common system utilities and a common user interface. All DHCP systems, for example, use a common data dictionary, common data base management system (the VA File Manager), common menus, common programs, packages, functions, documentation, displays, style of interaction and development philosophy. All information is common to the same information domain. Common files are always used. A package will not pass design review or verification if it creates its own file when an existing file would serve. To the user and site manager, this means that duplicate information never needs to be reentered. For example, once the temporary address is entered into the patient data base by the MAS personnel, all packages immediately have access to that data with no additional programming required by any software package. Practically, this means that the Pharmacist will immediately know that the patient is at a different location than the home address which will result in elimination of useless mailing of medications to a veteran who will be away from home for the next several weeks. Since all files and data reside in an environment under a common data base, retrieval of data from this integrated data base is much easier than retrieval of similar data from an environment which requires tortuous routing through elaborate software interfaces between different data environments.

Apparent integration often exists in a system that has very little real technical integration. In such systems, the apparent integration is achieved through substantial and continuous software programming efforts to develop and maintain interfaces among application modules. Maintenance of an interfaced system is much more difficult and costly than maintenance of an integrated system because every time there is a change in one application, all its interfaces with other applications must be changed as well.

Unlike other systems, DHCP design started from a concept of a technically totally integrated system, and therefore integration is built in, and not tacked on as an after thought.

Hon. Gerald B.H. Solomon to National Association of VA Physicians

QUESTIONS SUBMITTED BY THE HONORABLE GERALD B. SOLOMON
FOR THE HEARING BEFORE THE SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE
REGARDING THE DEPARTMENT OF MEDICINE & SURGERY
COMPUTER SYSTEM ACTIVITY
April 8, 1987

TO NATIONAL ASSOCIATION OF VETERANS ADMINISTRATION PHYSICIANS

QUESTION: Could the chief of the electrophysiological lab install the files he designed without programming knowledge on a system such as IHS, and could your staff have done the other things you have described using IHS?

RESPONSE: The additional fields and files compatible with a specific application can be easily added to the files that we have established in the cardiology section of the DHCP. This is because the basis of DHCP is the VA File Manager which is quite flexible. I do not know whether the chief of an electrophysiological section can do this as readily with any other system.

QUESTION: You make a rather pointed statement that the findings of some of the study documents "do not conform to norms of truthfulness required in studies that attempt to be impartial and objective." Could you say how they fail to do so, and do you attribute this to commercial puffery, starting with a conclusion and working backwards, or other factors?

RESPONSE The two parts of this question will be answered in separate sections as follows:

I. How some of the studies of the DHCP fail to be truthful

A. The studies in question

The particular studies identified as failing to be truthful were the vendor critiques and the Appropriations Committee Surveys and Investigation Staff report. In our testimony, we pointed out that all of the studies we had examined failed to provide the information that was relevant for evaluating the DHCP capabilities and methodology; but in addition, the vendor critiques and the S&I Staff report were advocacy documents rather than "studies" that attempted to be impartial and objective. As advocacy documents, these materials are biased against the DHCP, and do not provide a balanced picture of the pros and cons of the achievements and progress of the Department of Medicine and Surgery's medical information systems projects. In contrast, the other studies, even though they are based on inadequate evaluation criteria and method, give evidence of attempting to be impartial and objective.

There is nothing wrong with advocacy. Our political and legal institutions in this nation are structured to enable the truth to appear as a result of debate between advocates of different approaches. Advocates gain credibility to the extent that their partisan arguments are based on verifiable fact, on the one hand, and address the issues that are brought forward by their adversaries, on the other hand. Advocates lose credibility if they engage in outright falsehood, on the one hand, and if, on the other hand, they seek to conceal the underlying facts and issues in the case. Both the vendors in their critiques and the S&I Staff in its report have lost credibility as a result of their lack of truthfulness.

B. The vendor critiques

Some of the interested vendors have made false statements in letters and other presentations:

-- In a February 26, 1987 letter, Shared Medical Systems stated that the various DHCP modules, such as clinical laboratory, admissions discharge and transfer, outpatient registration, pharmacy, and others, "don't work well together as an integrated system." This statement is false. SMS goes on to make a series of other pejorative statements about the DHCP, based in whole or part upon this claim of serious technical problems with the modules. Indeed, if the modules do work well, and work together well, then the conclusion SMS draws -- "The V.A. has neither the management or technical expertise nor can it provide the resources to its hospitals to make the project successful" -- would have no merit.

-- In an October 1986 presentation and white paper, Mc Donnell Douglas claimed that "because the initial design did not address integration, DHCP lacks the flexibility to respond to changes in requirements brought about by growth and other factors that occur in one department/ancillary and impact other departments/ancillaries." The fact is that the DHCP did address integration from the very beginning, as the December 1978 DM&S meeting at the Oklahoma City VAMC clearly documents, along with other documentation before and since. McDonnell Douglas uses this falsehood as a key premise in its arguments against the DHCP.

Both of these organizations had information about the DHCP which adequately established that the above-cited allegations were untrue. The organizations, nevertheless, built their critiques of the DHCP on these false allegations.

C. The Surveys and Investigations Staff report

This 39 page report, dated December 3, 1986, is clearly an advocacy document because it includes negative opinions and allegations against the DHCP, and excludes the mountains of evidence and positive comments that demonstrate the benefits and success of this system. The summary and statement of scope of the report offer no hint that the staff had set out to produce a partisan attack against the DHCP. To someone who did not have first hand knowledge of the DHCP, the report would appear to be an effort to outline problems found in a faltering government project; to those who work in the VA Medical Centers, the report is clearly a partisan smear attack on a program that is working well and providing significant benefits to the agency and the veterans that are cared for in our medical centers.

The first violation of the norms of truthfulness, therefore, is the failure to inform members of the Appropriations Committee that the intention of the S&I Staff was to build the strongest case possible against the DHCP. Members of the committee, as well as other members of Congress, have the right to know what staff is setting out to accomplish in a report. The Staff could have stated candidly in the introductory section that this report represented the case against the DHCP, and the case for commercial vendors' systems, and that interested members of the Committee could obtain rejoinder materials from the agency in question -- the Veterans Administration. With this disclosure of intent, members of Congress would have been prepared to weigh the assertions in the S&I document against counter arguments provided by the VA, and would not have been deceived into thinking that the S&I Staff report was to be considered a balanced, impartial, objective attempt to arrive at the facts.

A candid disclosure of the advocacy intent of the report would not have been enough, however, for this particular S&I Staff document. To be truthful, the staff would have had to disclose also that the report was based on an alteration of the legislative history underlying the DHCP. The most fundamental violation of the norms of truthfulness found in this S&I Staff report is the falsification of the record of Congressional intent and legislative action.

1. The S&I Staff report's account of legislative intent

In Section D of the introduction (page 3), the report quotes from the appropriations conference report for FY 1981, and the committee report on further continuing appropriations of December, 1982. The particular sections quoted discuss the lack of progress made by the VA in resolving questions concerning the appropriate medical information systems options, and state the Congressional guidance that the VA get on with the task of using available ADP technology. In Section II.A.2 (pages 8-9), the report outlines the sequence of Congressional and VA agency actions that established the DHCP, according to the S&I Staff:

-- October 1981: the VA Administrator initiated a review and assessment of ADP problems;

-- February 22, 1982: the VA Administrator established the DHCP with authority over computers placed in the hands of VA Medical Centers, with ODM&T limited to a peripheral and supporting role;

-- June 1982: establishment of the Medical Information Resources Management Office (MIRMO) to direct and control the DHCP;

-- December 1982: Congress authorized the transfer of COMISS resources to support the DHCP, with the understanding that the DHCP was to be merely "an examination of a potential system," and after assurances to Congress that the DHCP "was consistent with its longstanding intention to evaluate various approaches in the utilization of medical technology."

-- April 1983: the VA significantly altered the basic plan by converting the DHCP from an examination of a potential system to the implementation of an operational system.

The Staff report continues with the chronology and narrative of events in Section III.A (pages 32-33):

-- May 1983: the House Committee on Appropriations directs the VA to test commercial medical ADP systems;

-- June 1983: the Senate Committee on Appropriations directs the VA to prepare a plan to conduct demonstrations of commercial hospital information systems at three VAMCs, and to set aside funds to cover the plan;

-- October 1983: VA releases RFP for the three integrated hospital systems;

-- August 1984: contracts were awarded to three commercial vendors: Shared Medical Systems, McDonnell Douglas, and Electronic Data Systems;

-- September 1984: installation of the demonstration systems began at the three VAMCs.

The Staff report intertwines with this chronology a number of evaluative comments on the impact this series of actions was having, for example:

-- The February 1982 Executive Order of the VA Administrator establishing the DHCP "resulted in a schism between the organizations that fostered rivalry, bureaucratic infighting, distrust, and organizational discord. The result has been a serious weakening of management direction and control over

ADP resources." (page 8)

-- "By the time the FY 1983 ADP plan was formally published in April 1983, VA had significantly altered the basic contents of the plan. Specifically, DHCP had become an operational system rather than an examination of a potential system." (page 9)

-- "The advanced hardware procurements represented a pre-authorized implementation decision prior to adequate test and evaluation of the initial phase of DHCP deployment. . . . The decision to accelerate DHCP hardware procurement was described as an attempt to lock in as many DEC minicomputers as possible to establish hardware preference and offset any possibilities of a slow down, redirection, or evaluation of alternatives to DHCP." (page 9)

A fundamental premise underlying the S&I Staff report, therefore, is that the DHCP was not intended by Congress to be more than an "examination of a potential system," introduced for the purpose of being compared to the commercial vendors' integrated hospital systems.

2. The Congressional Record's account of legislative intent

The Congressional Record (Vol. 128, No. 153 - Part II, December 20, 1982) presents a different picture of the legislative intent of the Congress when it directed the VA to implement the DHCP. The amendment that Congress introduced into the continuing resolution for fiscal year 1983 is as follows: (page H 10638)

> "Amendment No. 40. Restores language proposed by the House and stricken by the Senate repealing the $35,000,000 limitation on the Veterans Administration's medical automatic data processing services, directing the VA to cease further

development of the computerized medical information support system, and shifting resources to support the installation of the decentralized hospital computer program.

"The Committee of Conference does not intend that such specific actions as those taken in this joint resolution become common practice. However, the Committees on Appropriations have for years been encouraging the Veterans Administration to resolve the issue of the proper medical computer system. The VA has struggled with the problem without any discernible progress. Any further delay in proceeding with the decentralized (MUMPS) system is not justified and will only result in the VA's medical computer system falling further behind the private health care industry. The conferees are concerned that the VA continue with all deliberate speed to develop plans to use the automated output of the decentralized systems in order to provide system-wide data to the Administrator.

"Amendments No. 41, 42 and 43: Change section numbers."

Senator Garn, commenting on the intent of this amendment, stated: (page S 15701)

"The conferees agreed to the House language directing the VA to terminate the development of a centralized hospitalwide information system -- computerized medical information support tystem -- Comiss and implement a decentralized minicomputer system -- MUMPS. However, the conferees do not intend that such specifications as those takin in this account will become common practice. However, the Appropriations

Committees for years have been encouraging the VA to resolve the issue of the proper medical computer system. . . "

Senator Garn leaves no doubt about the intent of the Senate: Without this extraordinary action by Congress, there was the possibility that the VA would continue to vacillate between options and approaches to the computerization of its medical centers. This legislation was clearly intended to force the VA to implement the DHCP, and thereby resolve"the issue of the proper medical computer system."

Congressman Montgomery added his understanding of the significance of this amendment: (H 10445)

"Mr. Speaker, when the House recently passed the continuing resolution, I complimented the distinguished chairman of the Subcommittee on HUD-Independent Agencies, Mr. Boland, and other members of the committee, for the language contained in the resolution that would assure the early implementation of a computer capability within the Department of Medicine and Surgery of the Veterans' Administration.

"I am delighted that the other body has receded and has accepted the House provision. I compliment the committee for holding firm to our position. Veterans everywhere will benefit greatly from our action. The quality of veterans' health care will be enhanced in every VA medical center. It will also mean that physicians will have a tool not now available to assist them in saving lives. In addition, giving VA hospitals computer capability will mean that veterans will not be required to wait long periods of time to see a physician or to get his or her prescription filled at a VA pharmacy.

" Mr. Speaker, this is a very important decision by the Congress. The Veterans' Administration has wasted years because of its inability to make a decision on the kind of computer system to be installed in VA hospitals. Computer capability is desperately needed if the VA is to provide the quality of care veterans expect to receive.

"The language contained in the resolution is unusual. We do not like having to make decisions like this, but veterans have waited long enough for this important ADP component to be placed in VA hospitals.

"Mr. Speaker, I compliment the conferees for standing firm with the other body and congratulate the distinguished gentleman from Massachussetts (Mr. Boland) for his leadership on such an important veterans' health-care issue."

Congressman Boland also expressed his understanding that this amendment would eliminate further delay, concluding with the statement that "I believe that there is now nothing that should impede the Veterans' Administration from beginning to install a workable medical computer system in its 172 hospitals." (page H 10433)

The legislative intent, therefore, was that the DHCP be installed as an operational system, and not be just one more examination of a potential system. Moreover, the data capture and management of information through this DHCP was explicitly intended to be the automated source of data for the agency's administrative information systems, and thereby close the gap that had frustrated agency management for so many years. The DHCP could not be just a transitory, "potential system" for evaluation alongside other alternatives, if it were intended to be the source of automated output "to provide system-wide data to the Administrator."

3. The Surveys and Investigation Staff's responsibility

By concealing this documentary evidence of the true intent of Congress in establishing the DHCP, and then setting out to create a fictitious legislative mandate focused on the IHS demonstration projects, the S&I Staff did not conform to norms of truthfulness required in studies that attempt to be impartial and objective. In addition, this Staff broke faith with members of Congress who rely on staff studies and reports in formulating their positions on issues.

It remains to be seen whether this S&I Staff report's bias and misinformation will reappear in the forthcoming GAO report on the DHCP. It should be noted that the GAO was not candid with the Congress during 1980 and most of 1981, when questions were posed about the existence of medical information systems software modules in VA Medical Centers. It was the discovery of the existence of these systems by the VA Administrator during the fall and winter months of 1981 that motivated the February 22, 1982 Executive Order establishing the DHCP. Even though the GAO knew about these modules, no information was offered to Congress about them, either in the July 16, 1980 report (FGMSD-80-60), or in support for the House Government Operations Committee's Hearing of September 4, 1980 on the Veterans Administration Planning for Medical Automated Data Processing Needs. The Report (House Report No. 96-1538) on that Hearing, transmitted to Congress on December 19, 1980, highlights how incomplete and misleading the July 16, 1980 GAO report had been.

Once the true legislative mandate of the Congress is acknowledged, the actions of the DM&S officials become clear. Most of the decisions and actions that the S&I Staff report finds inconsistent, when focusing on the IHS demonstrations as the central issue, become entirely consistent and understandable in light of the Congressional mandate to install the DHCP modules in all VA medical centers as expeditiously as possible. All of the S&I Staff report's points of criticism need to be reexamined from the perspective of whether or not the VA medical center and regional ISC personnel were using the resources available to them to install the decentralized hospital computer program expeditiously. Each of the complaints or criticisms that the S&I Staff reported needs to be traced back to facts, and a determination made concerning the accuracy of the criticism; but then the real test must be applied: given the resources available, and the Congressional mandate to install the DHCP as quickly as possible, were the trade-off decisions made by the VA officials involved prudent, safe, and consistent with the objective of installing the DHCP as quickly as possible? The task for the S&I Staff is to identify a better course of action that could have been taken, given the full set of circumstances prevailing at the time each trade-off decision was made.

For example, the S&I Staff in section II.A.1 talk about the importance of "strategic ADP planning," and complain that DM&S for the past 3 years has published annual ADP plans "that contains some descriptive information about DHCP, identifies functions to be automated, and provides an overview of the development and implementation process," but is not "an integrated ADP plan that includes computers, software, telecommunications, and office automation requirements." As it turns out, the VA over the previous 15 years leading up to the 1982 Congressional mandate had produced numerous ADP plans including computer, communications, office automation and other requirements. But these plans, presented proudly to Congress year after year, had never been translated into a workable medical computer system in its 172 hospitals. The action of Congress on December 19, 1982 was intended to break this logjam of planning and selecting "the proper medical computer system," and to movo the VA on to "beginning to install a workable medical computer system in its 172 hospitals," in the words of Congressman Boland (page H 10433).

Similarly, in II.B.2, the S&I Staff complain that in the VA's sizing studies for determining the capacity of computers and storage devices to be obtained, "no comprehensive analysis of capacity has been completed based on total system requirements." What the S&I Staff need to determine, however, is whether the VA's incremental sizing methodology, based on confirmed needs, is less effective for complying with the Congressional mandate for the expeditious installation of the workable DHCP in all VA medical centers than some comprehensive analysis of total system requirements. The S&I Staff, for example, need to explain why the Department of Defense's comprehensive sizing analysis of its medical treatment facilities' needs has been discovered by the GAO to be so inaccurate (see GAO Report IMTEC-86-12, Concerns About the Acquisition Plan for DOD's Composite Health Care System, March 1986, pages 7 - 8, 32 - 33.)

Section by section, paragraph by paragraph, the same inadequacy can be found throughout the S&I Staff report. The staff ignore the practical and reasonable framework of constraints and resource limitations that the VA personnel have faced in expediting the installation of the DHCP. Instead, the staff establish theoretical ideals that assume a perfect world with no resource constraints, and then compare biased criticisms of the VA personnel's pragmatic and effective actions against this theoretical ideal.

The most serious deficiency of the S&I Staff report, however, is the refusal to recognize the legislative intent of the Congress in its mandate to the VA to install the DHCP. The subsequent action to establish a test of three commercial hospital information systems in no way abrogated the Congressional mandate to install the DHCP. The demonstration test of the commercial IHSs has yielded the information they were intended to yield. The VA should be allowed to proceed in accordance with that information.

II. To what factors can the character of this report be attributed?

This S&I Staff report currently is being used to:

-- delay the acquisition of computer equipment needed for the VA to complete the installation of the DHCP in its medical centers as mandated by Congress in 1982;

-- influence the GAO to be less positive in its assessment of the DHCP;

-- reduce the likelihood that the Department of Defense will be motivated to select the VA DHCP approach instead of the CHCS vendors;

-- impede the cooperation between the VA Department of Medicine and Surgery and the U.S. Indian Health Service in the joint refinement and evolution of the DHCP;

-- impede cost reduction projects in VA Medical Centers;

-- ease the public relations problems of the commercial IHS vendors, resulting from the Booz Allen & Hamilton comparative study;

-- and probably other purposes as well.

The S&I Staff investigation of the VA DHCP was initiated on April 23, 1986, shortly after the March 31, 1986 report of the U.S. General Accounting Office (IMTEC-86-12) on Concerns About the Acquisition Plan for DOD's Composite Health Care System. Mr. Robert Kane was brought in from the Department of Defense to be a key person in putting the report together. Mr. Kane had served under Mr. Harold Wienberg, when the latter was responsible for information systems acquisition in the office of the Assistant Secretary of Defense for Health Affairs. During the spring and summer of 1984, this office attempted to persuade the Congress that it should not have to look at the capabilities offered by the VA DHCP, as a potential cost saving approach to introducing medical information systems into DOD medical treatment facilities. The Congress did not accept Mr. Wienberg's reluctance to consider the DHCP, and required an examination of this option.

The success of the DHCP in the VA medical centers and in the Indian Health Service's hospitals and clinics poses a severe threat to the commercial interests offering a proprietary system for the CHCS procurement. Not only has the DHCP been successful in the two DOD test sites at the Air Force's March AFB and the Army's Fitzsimmons base hospital, but it also has been successful in sharing arrangements such as that between the McDill AFB and the Tampa VAMC. In addition, the AQCESS system, based on the DHCP integrated structures, was being successfully installed in all DOD hospitals at the time the S&I investigation was ordered. The scale was tipping irrevocably in favor of the DHCP becoming the medical information system selected for use in DOD medical treatment facilities.

The S&I Staff report can be seen as an effort to arrest the emergence of the DHCP as the common, shared medical information system capability for use in all federal government health services at minimum cost to the taxpayer. With the delay in the CHCS selection of a CHCS vendor that the GAO was recommending in March 1986, the chances of the DHCP becoming selected as the DOD system were seen to have increased. A very negative S&I Staff report on the DHCP possibly could counterbalance its attractiveness and proven success.

Attached are excerpts from the March 1986 GAO Report.

United States General Accounting Office

GAO

Report to the Congress

March 1986

ADP SYSTEMS

Concerns About the Acquisition Plan for DOD's Composite Health Care System

(EXCERPTS)

(NOTE: underlining added to highlight impact of successful DHCP expansion on vendor chances of winning the CHCS contract.)

GAO/IMTEC-86-12

GAO

United States
General Accounting Office
Washington, D.C. 20548

Comptroller General
of the United States

B-220732

March 31, 1986

To the President of the Senate and the
Speaker of the House of Representatives

The Department of Defense (DOD) Authorization Act of 1986 (Public Law 99-145) directs GAO to evaluate the process followed by DOD in selecting and awarding contracts for a state-of-the-art, worldwide medical computer system known as the Composite Health Care System (CHCS). The act also requires DOD and GAO to (1) evaluate DOD's test of the Veterans Administration's medical computer system (starting March 1, 1986) and (2) determine the cost and feasibility of using this system in DOD hospitals in lieu of CHCS before the final decision and contract award scheduled for July 1987. As required by the act, we will issue additional reports, prior to final contract award, covering the Veterans Administration's system demonstration projects and the competitive process followed to select a final CHCS vendor.

Although this report concentrates on acquisition activities associated with the award of contracts for an extended benchmark (or demonstration) test of CHCS,[1] it also addresses issues affecting the entire acquisition process. We found that DOD's acquisition strategy could limit the CHCS program's success. While changing the acquisition strategy could delay the CHCS project, the adverse effects of such a delay are, to some extent, mitigated by the availability of other non-integrated automated hospital systems.

Conclusions

The TRIMIS program has been active for at least 10 years, and DOD has spent over $222 million to test systems, develop capabilities, and define functional requirements for this program. While DOD has implemented a sound methodology for selecting the best vendors to compete for the CHCS contract, we are concerned that other aspects of the CHCS acquisition strategy may expose the government to unnecessary risk. Specifically, DOD may be allowed to select a final vendor and to deploy costly system hardware before fully testing software. DOD's acquisition strategy may not go far enough in ensuring that, after a large expenditure of funds, CHCS will provide adequate comprehensive medical ADP support to the military services. Providing additional time and money to the CHCS program so that the selected vendor can deliver a full and comprehensive system meeting all defined requirements is a prudent course of action. While such action may delay CHCS implementation, the significance of the delay would be mitigated, to some extent, by the availability of other non-integrated automated hospital systems.

Winning System Will Not Be Tested in a Military Hospital Before Full-Production Decision

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Under Circular A-109 and DOD Regulation 5000.3, the winner of the CHCS extended benchmark competition would be required to further test a full-scale prototype in the "realistic" environment in which the system is expected to operate before a full-production contract is awarded. This procedure is known as a BETA test. The current CHCS acquisition strategy, however, does not require the winning vendor to demonstrate that the system will operate in a military hospital before DOD awards a full-production contract.

Following completion of the extended benchmark test, which is being conducted in the vendors' facilities, the selected vendor will be awarded a full-production contract that requires a BETA test of the prototype system in three DOD hospitals for 3 months. The BETA test will, however, address only a portion of the CHCS requirements; the remaining requirements will be tested later. While the BETA test must be passed before CHCS software is deployed, CHCS hardware deployment is not contingent upon successful completion of this test. CHCS hardware deliveries to hospitals worldwide are scheduled to begin 4 months following final contract award, whether or not the BETA software tests are completed or are successful. If the BETA test is unsuccessful, DOD may have to cancel the contract. Such action would result in the government's (1) forfeiting its substantial investment in the partially procured and installed hardware that would not be needed if the software does not meet test specifications and (2) facing substantial delays in planning and conducting a new acquisition. According to TRIMIS program officials, they chose the current BETA test approach and proposed CHCS contract award strategy in an attempt to maintain a rapid deployment schedule.

CHCS Acquisition Delays Are Mitigated by Existing ADP Capabilities

We believe the deficiencies in the current CHCS acquisition strategy warrant correction before CHCS is deployed. While this course of action may result in delays and may not seem attractive to DOD, the potential adverse effects resulting from any such delays would be mitigated, to some extent, by the availability of existing military non-integrated automated hospital systems, including one system currently being deployed to all military hospitals worldwide.

The AQCESS System Is Being Deployed

DOD is currently deploying to all its hospitals an interim, non-integrated, quality assurance system known as AQCESS; this system incorporates all of the functional capabilities to be deployed during CHCS Phase I, as well as additional capabilities. As of January 4, 1986, the program office deployed 94 AQCESS systems; an additional 73 systems are scheduled to be deployed by June 1986. Thus, by June 1986, all 167 DOD hospitals worldwide are scheduled to receive the initial AQCESS. TRIMIS estimates the 5-year, life-cycle cost of AQCESS to be about $74.6 million. This amount includes $36.4 million for planned deployment of AQCESS outpatient quality assurance and scheduling enhancement to all 167 DOD hospitals. Under the CHCS acquisition strategy, AQCESS will be replaced by CHCS in 1989. However, the project office is budgeting for an additional 2 years of AQCESS operations in case the CHCS project experiences delays.

Current Strategy Increases Risk

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The current CHCS acquisition strategy exposes the government to the risk of selecting a final vendor and deploying a costly system before it is adequately developed and tested and the required cost and delivery time are known. This strategy may not go far enough in ensuring that, after large expenditures of funds, a satisfactory system fulfilling the promise of comprehensive medical ADP support will be made available to the military medical departments. Awarding the final vendor contract without having adequate assurance that the system will perform as required could lead to (1) higher costs and (2) deployment of a system that does not perform as required and may never fully realize the benefits required to justify the billion-dollar expenditure.

Indeed, one of the attractive features to DOD of the current acquisition strategy is that much delay is avoided by awarding the final contract and beginning deployment of Phase I of CHCS while the vendor concurrently develops software for the remaining requirement. Moving additional requirements and additional testing to the pre-award period would effectively delay implementation of Phase I capabilities. However, by proceeding under the current strategy to select the final vendor, award the contract, and deploy CHCS Phase I capability, DOD is trading off its assurances that the remaining requirements will be completed satisfactorily and within reasonable time and cost. Since these requirements are complex and important to the overall utility of the system, this tradeoff may be a high price to pay for expediency in deploying Phase I.

Additional Time for Testing the Veterans Administration's System May Be Justified

If the CHCS acquisition is delayed. it would allow additional time to be spent on the congressionally mandated test and evaluation of the Veterans Administration's Decentralized Hospital Computer Program system under way at March Air Force Base in California and at Fitzsimons Army Hospital. These tests are scheduled to run from March 1 to September 1, 1986, to allow time for evaluation before a final CHCS decision and contract award in July 1987.

The fiscal year 1986 DOD Authorization Act directs DOD to test the Veterans Administration's medical system in two military hospitals, one at March Air Force Base and the other at a large non-Air Force military hospital to be designated by the Secretary of Defense. The Fitzsimons Army Hospital was later chosen as the second test site, and both projects are now under way. The legislation makes clear that the test of the Veterans Administration's system should be considered as an alternative to a vendor-developed CHCS system and that this alternative should be evaluated while the CHCS acquisition process continues. A final choice is to be made prior to July 1987, when the final CHCS contract is due to be awarded.

Given the need to procure and install all hardware, prepare the hospital sites, lay cabling to terminals and printers, and train users in how to operate the system, the tests are being conducted in a very short time frame. If the decision point for the CHCS vendor contract were moved back, the added time for testing and evaluating the Veterans Administration's system could be well spent to better ensure that the advantages and disadvantages of this alternative are fully explored.

CHAIRMAN G.V. (SONNY) MONTGOMERY TO McDONNELL DOUGLAS FEDERAL SYSTEMS COMPANY

MCDONNELL DOUGLAS
FEDERAL HEALTH SYSTEMS DIVISION
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June 29, 1987

Honorable G. V. (Sonny) Montgomery
Chairman
Subcommittee on Hospitals
and Health Care
Committee on Veterans' Affairs
335 Cannon Office Building
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed are the answers you requested to the additional questions submitted by Mr. Solomon ~~and Mr. Bilirakis~~. We appreciate the opportunity to clarify some of the issues associated with the Dorenfest article and the Booz-Allen and Hamilton report.

Sincerely,

William T. Corum
Vice President

WTC/cnf

QUESTION: According to the January 30, 1987 issue of Modern Healthcare magazine, in an article written by Mr. Sheldon Dorenfest, a nationally known expert in the hospital information systems industry, it is stated that McDonnell Douglas began marketing the Integrated Hospital Information System in 1985.

Is this the correct date for introducing this system into the market?

ANSWER: Yes. The McDonnell Douglas Integrated Hospital System (IHS) product was introduced in 1985. However, this is not the product that is used or proposed for the Veterans' Administration (VA). The VA proposal and installation is built upon the McDonnell Douglas Patient Care System (PCS) product.

Confusion arises because the VA uses the same name "IHS-Integrated Hospital System" to label the set of functions it requires for a Patient Care System. The McDonnell Douglas "IHS" and the VA "IHS" are not the same concept or product.

The following chart outlines McDonnell Douglas offerings:

ABBR	NAME	YEAR	FOCUS
HFC	Hospital Financial Control	1970	Shared Financial System
HPC	Hospital Patient Care	1970	Shared Patient Care
HDC	Hospital Data Communication	1974	Data Collection
PCS	Patient Care System	1978	Patient Care
MHS	Mini-Based Hospital System	1980	Small Financial
IHS	Integrated Hospital System	1985	Large Financial

QUESTION: Is this the system McDonnell Douglas has targeted for large hospitals as Mr. Dorenfest has stated in the article?

ANSWER: For financial in-house hospitals - yes. The McDonnell Douglas Integrated Hospital System (IHS) focus is on the financial market for large hospitals. IHS does contain some patient care features. The McDonnell Douglas Patient Care System installed at Saginaw is targeted for small, medium, and large hospitals.

QUESTION: Is this the system that you contracted to install at the Saginaw Veterans' Administration Medical Center (VAMC)?

ANSWER: No. The VA proposal and installation is built upon the McDonnell Douglas Patient Care System (PCS) product.

QUESTION: If the product at Saginaw is not the product that McDonnell Douglas has targeted for the large hospitals, how will the Saginaw system be installed in all VA hospitals, large and small, when some 130 of them are larger than Saginaw?

ANSWER: As stated above, the McDonnell Douglas Patient Care System (PCS) product installed at Saginaw is targeted for small, medium, and large hospitals. It is currently installed at 31 commercial hospitals with bed sizes ranging from 115 to 960.

QUESTION: This same article in Modern Healthcare magazine points out that by the end of 1985 your company had 135 systems installed or 8% of the health care systems market after 10 years in this line of business. Is this correct?

ANSWER: No. Market studies, other than Dorenfest, show McDonnell Douglas with greater market share.

QUESTION: Where else, specifically, is your off-the-shelf product, modified for use at Saginaw, being used, and when did those users begin to use the product?

ANSWER: The terms of our sales agreements do not permit us to list customers by name and location; however, we can offer you the following concerning our Patient Care System. We have customers in 16 states, the District of Columbia, and Canada, covering hospitals with bed sizes ranging from 115 to 960 beds. This system was first installed in 1978.

QUESTION: Is it correct that your company has stated that the implementation schedule in Saginaw is too compressed and that more time would improve the effectiveness of the system?

ANSWER: No. McDonnell Douglas stated that the implementation schedule in Saginaw was ambitious and optimistic but achievable.

QUESTION: Did McDonnell Douglas agree to the current implementation schedule at Saginaw?

ANSWER: Yes.

QUESTION: Would this be the largest IHS ever installed in hospitals, if VA were to buy the system?

ANSWER: If by your question you mean the largest single order received by McDonnell Douglas for our Patient Care System, the answer is, yes; if you mean the installation at Saginaw the answer is, no.

QUESTION: How would the next largest system installed by McDonnell Douglas compare in size?

ANSWER: McDonnell Douglas has installed Patient Care Systems in hospitals six times larger in bed capacity compared to Saginaw.

QUESTION: How many different McDonnell Douglas employees and subcontractors were involved over this 2.5 year period at Saginaw, both in residence and off-site?

ANSWER: On-site: 8-1/2 Full Time Equivalents (FTE) for Facility Management
2.0 FTE's Client Services Representatives - supported by regional offices.

Off-site: 4.0 FTE's dedicated to tailoring off-the-shelf product to meet VA specifications and support.
1.5 FTE's Project Management/Administration

NOTE: Does not include FTE's dedicated to the computer room construction/renovation effort.

QUESTION: How many McDonnell Douglas personnel would be dedicated to retraining the thousands of VA medical staff who are trained to use DHCP now, how much would that cost the VA, and is the cost included in the McDonnell Douglas cost estimates given to the committee?

ANSWER: User training would be provided utilizing the "train-the-trainer" approach. The number of employees required depends on which month of the deployment phase one considers. At the beginning of deployment, 27.5 FTE's would be required with this number growing and peaking at 174 FTE's in month 39 of deployment, then decreasing to 37 in month 54 and zero afterwards. The cost for this training was included in the McDonnell Douglas cost estimate given to the committee.

QUESTION: Is McDonnell Douglas the sole owner of the Lab Software or is this product provided by a subcontractor who owns the product, and if not solely owned by McDonnell Douglas, do you depend on the subcontractor to make changes when required? How does this work?

ANSWER: No, McDonnell Douglas is not the sole owner of the Lab Software running at Saginaw. Yes, we work with the subcontractor to make changes to the LabCom software. This works through the following procedure:

1) McDonnell Douglas sends a change request to the subcontractor.
2) Subcontractor gives us a quote for the work.
3) McDonnell Douglas authorizes the work to be done.
4) Subcontractor contacts requestor to follow-up on specification.
5) Subcontractor delivers software.
6) McDonnell Douglas tests and accepts the software and prepares user documentation.
7) Subcontractor provides any necessary training.

QUESTION: How many different models and brands of lab instruments do you now have operationally interfaced to the lab system running at Saginaw?

ANSWER: The following lab instruments are operational at Saginaw:

Biovation	Biovation differential console 1300
Biovation	Biovation urinalysis console 3500
Coulter	Coulter S + V
Beckman	Astra 8
Miles Lab	Optimate
Olympus Optical	Demand chemistry analyzer
Ames	Clini-Tek 200

However, with our Innovative Approach of interfacing to the VA Lab System, we would be able to support all the lab instruments that are currently operational at any VAMC.

QUESTION: Please supply for the record a list of these instruments and the locations, other than Saginaw, where they are operational.

ANSWER: The following is a list of instruments currently supported by the Lab System:

Abbott VP with Data Concentrator (Cyclic)
Abbott Spectrum (No Communications)
ABL 3, 4 & 300
ACA 5 (Communications)
ADAM (Communications with Downloading)
ARIA HT
Astra 4 & 8

Instrument List (continued)

Autobac (IDX Printer)
Biovation Differential Console - 1100
Biovation Differential Console - 1300
Biovation Differential Console - 1320
Biovation Urinalysis Console - 3500
BMC 8700 (Communications with Downloading)
Clini-Tek 200
Clini-Tek 2000
Coag-A-Mate X2
COBAS (Cyclic)
Coulter DACOS (No Communications)
Coulter S & SR (DR-11 Interface)
Coulter S + Series
Coulter S + II Series with Data Terminal
Coulter S790
Coulter S880
DEMAND - (No Communications)
Dimension (Communications with Downloading)
Edmac MPI 4000 (SMA 12/60)
ELT-8 & 800 w/o Differential
ELT 800 with Differential
Flexigem (Cyclic)
Flexigem (Random)
Gemeni (Cyclic)
Gemeni (Random)
Hemalog D
Hematrak 240
Hematrak 360
Hematrak 480
Hematrak 450 & 590
Hitachi 704
Hitachi 705
Honeywell-ACS 1000
IL504/508
IL813 (CCA Communications)
IL814
IL1303
IL1312
Isodata 3001
LCI Standard Interface
KDA
Kodak Ektachem 100/400
Kodak Ektachem 700 (Communications)
Kodak Ektachem 700 (Communications with Downloading - Kermit Version)
Micromedic MS441 RIA
MLA-700
Nova 4 + 4
Optimate
Parallel (No Communications)
Parallel w/o R2D2 (Communications with Downloading)
Parallel w/R2D2 (Requires IBM-PC for Downloading)
Paramax (Communications with Downloading)
PASCO (Downloading)
RA1000 (Communications with Downloading)
SMA II & IIC
SMAC
SMAC II (Communications with Downloading)
Vickers (SMA 12/60)
Vitek - AMS (w/o Data Center)
Yellow Iris (Communications)

QUESTION: Hasn't the Department of Defense gone to dual sourcing on some contracts in order to get away from expensive sole source contracts?

ANSWER: The DoD has certainly increased the frequency with which they use dual sources in situations where this is feasible.

QUESTION: Let's say McDonnell Douglas gets the IHS contract. What will protect the VA from future price increases on services and software once the system is in place and the VA is completely dependent on a single contractor?

ANSWER: Dual sourcing is not the only way for the USG to provide protection against unwarranted future price increases and the USG is certainly much more adept than McDonnell Douglas at developing and implementing methods of achieving cost control in sole source situations. Typical techniques often used by the USG include:

a. Multiyear fixed price contracts (or options thereto) with economic escalation clauses which protect both the buyer and seller against unwarranted cost escalation and,
b. USG subcontracting of certain services/products included in a program which are amenable to such "breakout".

McDonnell Douglas is confident that an acceptable contracting method(s) could be negotiated to meet the needs of both parties.

QUESTION: Would McDonnell Douglas sell software packages developed at government expense for VA applications to other health care providers in the public and private sectors?

ANSWER: Negotiated contract arrangements would determine marketability of software to other health care providers in the public and private sector.

QUESTION: What are your major disagreements with the Booz-Allen-Hamilton report?

ANSWER: McDonnell Douglas' major disagreement with the Booz-Allen & Hamilton report has to do with the treatment of the cost data. Basically, we do not feel that an equitable comparison of true costs was made. Specifically, the costs for Decentralized Hospital Computer Program (DHCP) hardware was significantly underestimated. Not assessing the adequacy and reasonableness of VA equipment capacity to meet VAMC DHCP requirements could cause this hardware cost estimate to be off by 100% or more. We also feel that there is probably a significant amount of VAMC locally purchased equipment which should also be included. Attempting to compare maintenance costs on two different coverage plans is also inconsistent. The IHS 24-hour coverage with 4-hour response time is naturally going to be more expensive than DHCP's 12-hour coverage. Likewise, operational costs are going to be higher, given the IHS 24-hour per day/7-day per week coverage compared to DHCP's one shift coverage provided to the majority of VAMC's. Last but not least, excluding historical costs from the assessment (i.e., 201 million or 21% of total cost for DHCP) leaves out the significant "sunk cost" investment by the VA.

McDonnell Douglas provided Booz-Allen & Hamilton the same Innovative Approach which was submitted to the ADA for management and MIRMO staff at VACO. This approach, which included significant cost savings to the VA compared to original proposals, was also excluded from the report.

Concerning the effectiveness assessment of the DHCP and IHS approaches, McDonnell Douglas disagrees with the conclusion reported in the Executive Summary (Table 3, Page ES-5), that DHCP is more effective in providing functionality. We believe that the findings of the study do not support this conclusion. The characteristics of functionality as defined in the study are:

- Extent of capabilities
- Consistency with VA requirement
- Ease of use

With regard to extent of capabilities the current program assessment (Exhibit III-3, Page III-10) indicated that there is no difference between IHS and DHCP; whereas, the evidence (findings) provided shows that IHS supports 6 of 10 primary users compared to 3 of 10 for DHCP. Looking at the current deployment status (Exhibit II-7, Page II-18) it becomes apparent that IHS actually supports 8 out of 10 primary user groups, today, at the VAMC-Saginaw. Appendix G (Pages G-3 and G-4) further indicates that more functionality was observed in IHS then was observed in DHCP. Last but not least, the study concluded (Page III-13, 2nd paragraph) "As a result, the study found that the greatest extent of functionality is currently provided under IHS."

With regard to consistency with VA requirements, the current program assessment indicated that IHS was less effective than DHCP because "...off-the-shelf IHS systems are currently less consistent with VAMC requirements than their corresponding nationally released DHCP modules". This statement, as it stands, is true but very misleading. RFP Amendment 5, dated 15 June 1984, allowed vendors to install an off-the-shelf system and to then modify the software to meet all the requirements of the RFP and to tailor the IHS to meet site specific requirements. This, in essence, was done, though not completed for all modules at the time of the study. A fundamental deficiency of this study was the exclusion of a detailed functionality matrix comparison of DHCP and IHS. Without this, the study team had to rely on subjective user opinions rather than objective facts concerning IHS's consistency with VA requirements. There were however, the following findings regarding DHCP:

- Special Interest User Groups (SIUG) attempt to meet functional requirements of 50% of the VAMCs with nationally released packages.
- DHCP national packages are almost always installed without modification despite local conditions that could not be handled by routine capabilities.
- ISCs will not support modifications to software made at the site.

On Page III-17 (third paragraph) the following statement appears: "The information system effectiveness findings seem to support the IHS approach." McDonnell Douglas concurs with this statement although the conclusions reached in Tables 1 and 3 of the Executive Summary do not reflect these findings.

There is one last point that we would like to make concerning this study. Arthur Andersen (AA) and Company has, under a $2.9 million VA contract, performed as monitor and evaluator of the IHS implementation process since its inception in September 1984. We are concerned that the only input used for this study from AA was the pre-automation report of July 1985.

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